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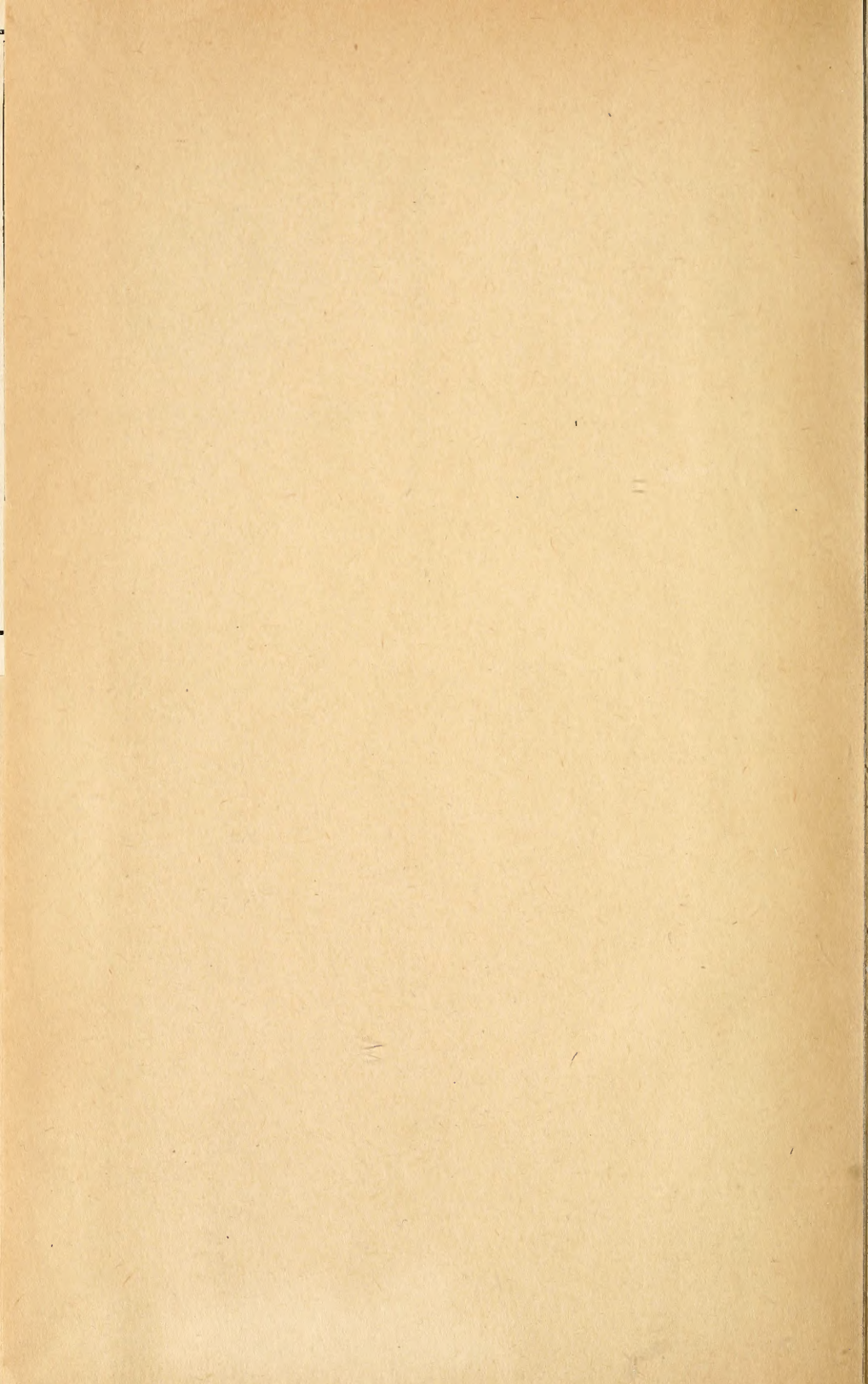
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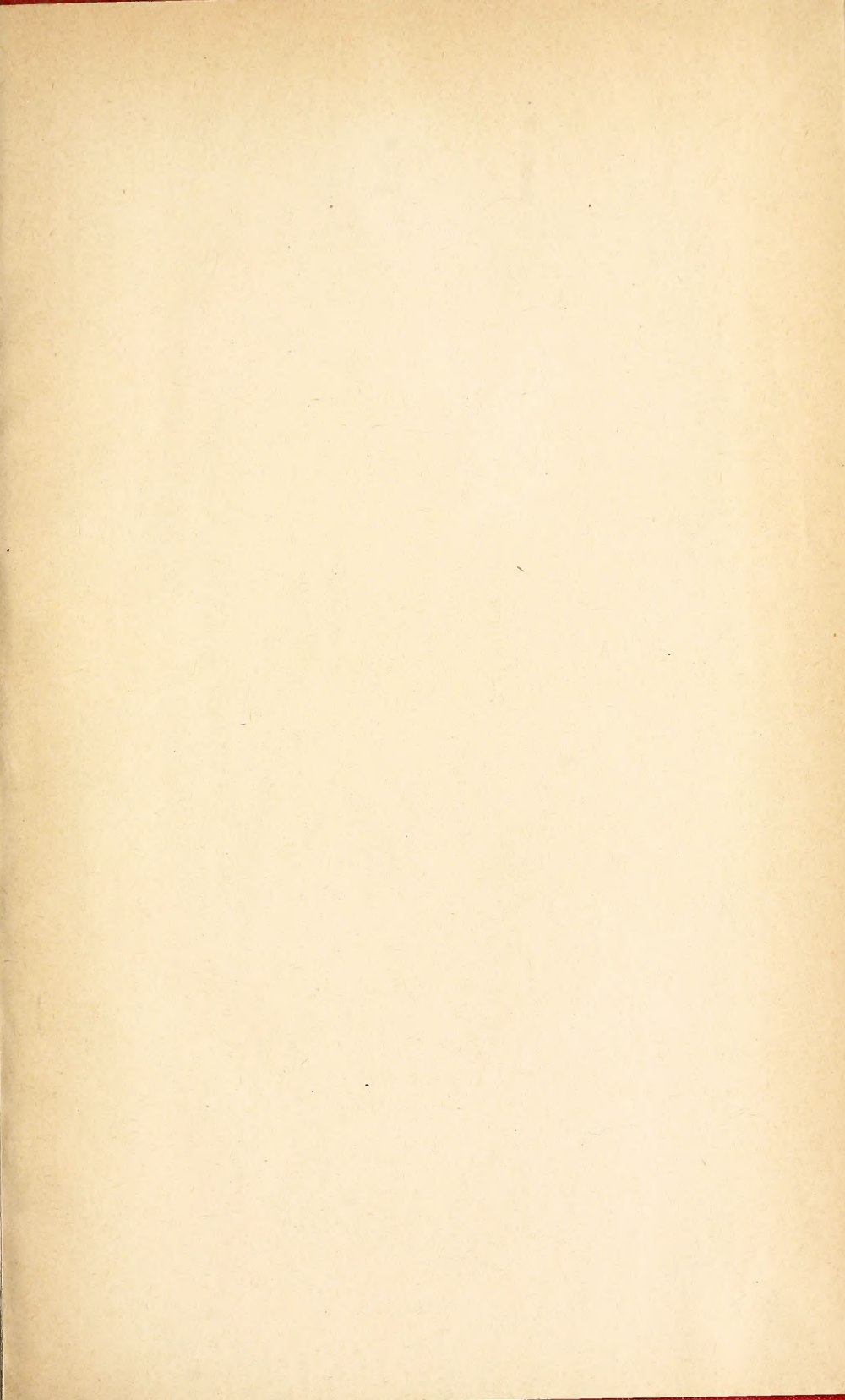
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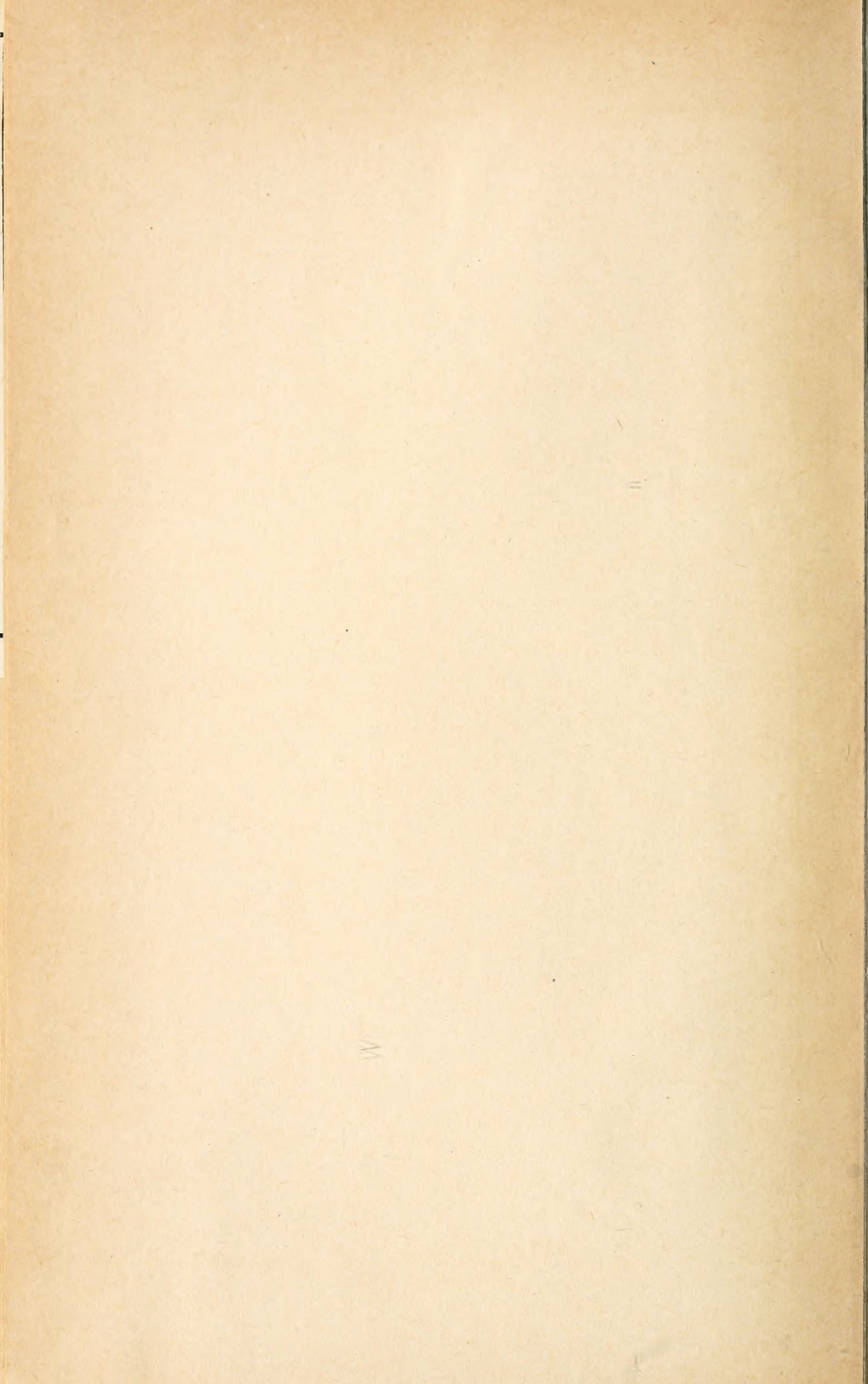
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NINTH BIENNIAL REPORT

OF

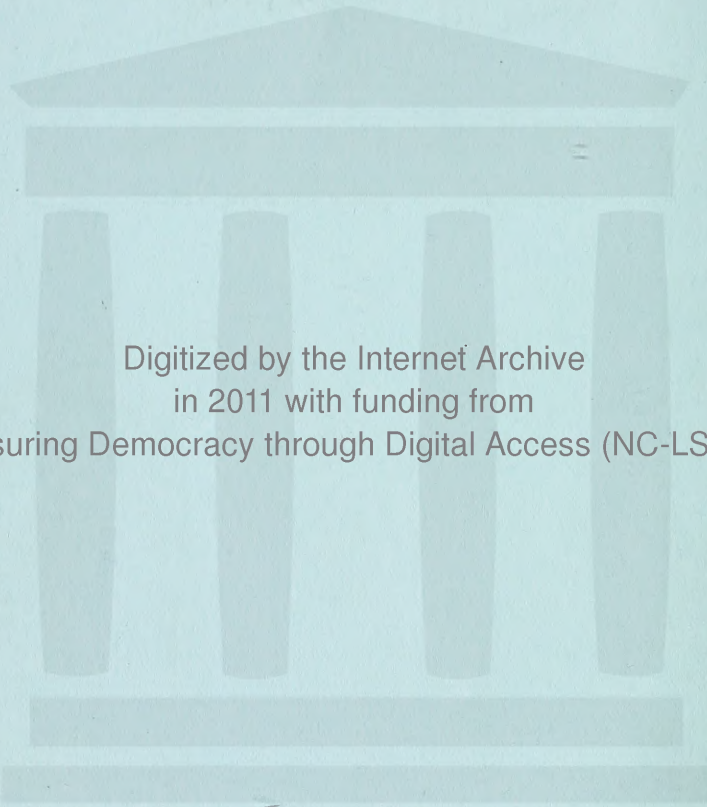
**The Department of Conservation  
and Development**

OF THE

STATE OF NORTH CAROLINA



BIENNIUM ENDING JUNE 30, 1942



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NINTH BIENNIAL REPORT

OF

THE DEPARTMENT OF CONSERVATION  
AND DEVELOPMENT

of the

STATE OF NORTH CAROLINA

For the Biennium Ending June 30, 1942

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BOARD OF CONSERVATION AND DEVELOPMENT

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R. BRUCE ETHERIDGE, *Director*.....Raleigh

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## LETTER OF TRANSMITTAL

Raleigh, N. C.  
October 15, 1942

To His Excellency, HON. J. MELVILLE BROUGHTON  
*Governor of North Carolina*

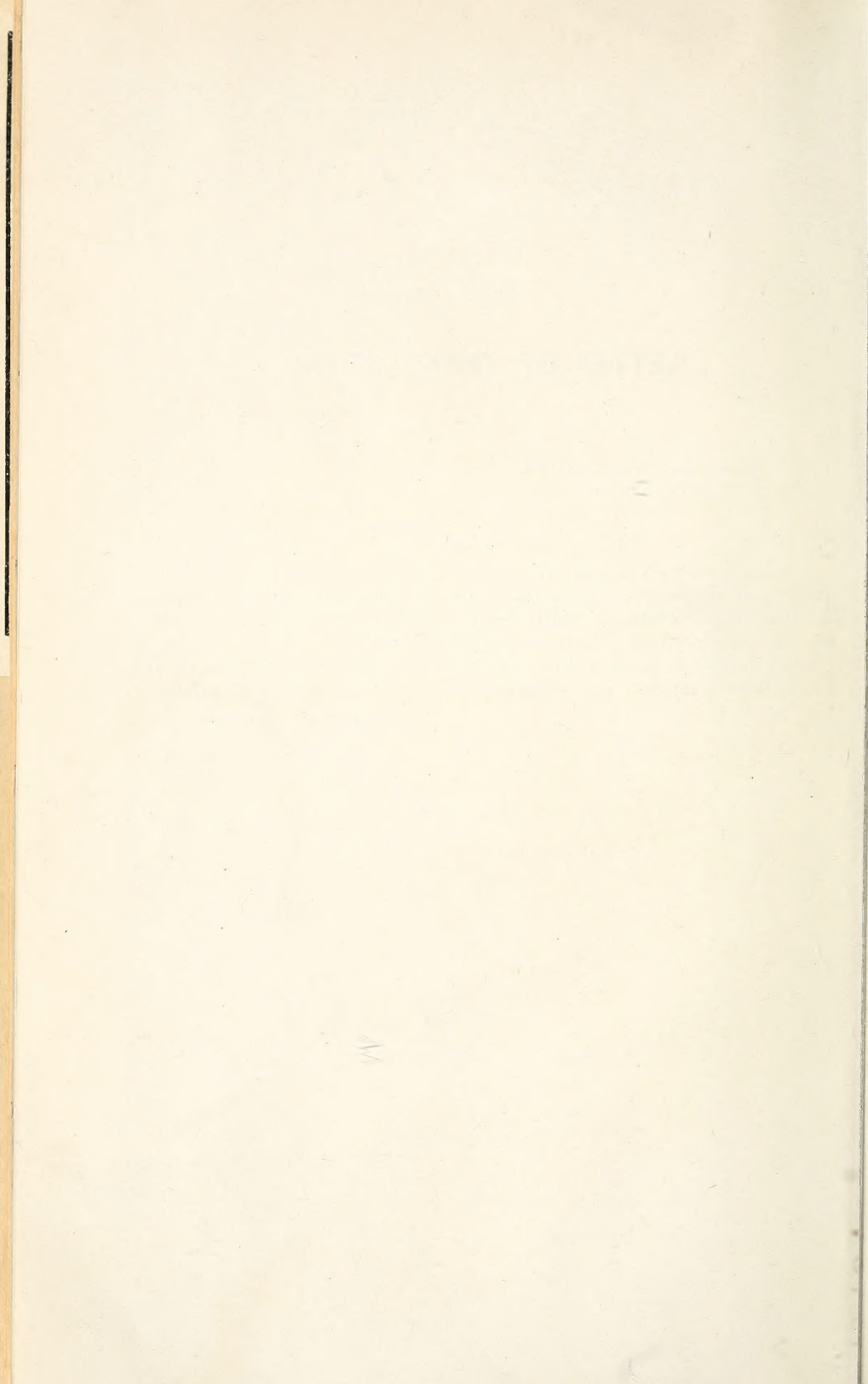
Sir:

In accordance with Section 11, Chapter 122, Public Laws of 1925, and by direction of the Board of Conservation and Development, I have the pleasure of submitting herewith the Ninth Report of the Department of Conservation and Development for the biennium ending June 30, 1942.

There are shown in this report a review of the activities of the Department during the last two-year period and a financial statement for the biennium.

Respectfully submitted,

R. BRUCE ETHERIDGE,  
*Director.*





# DEPARTMENT PERSONNEL AND PRINCIPAL OFFICERS

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## ADMINISTRATIVE

R. BRUCE ETHERIDGE, *Director*  
PAUL KELLY, *Assistant Director*  
W. RAY BISHOP, *Auditor*  
MRS. ETOYAL P. HOBIE, *Senior Accounting Clerk*  
EULA LINCOLN, *Junior Accounting Clerk*  
MARGARET DAUGHTRIDGE, *Senior Stenographer-Clerk*  
VIOLA MAXWELL, *Senior Stenographer-Clerk*  
L. W. BUNN, *Junior General Clerk*

## DIVISION OF COMMERCIAL FISHERIES

CAPT. JOHN A. NELSON, *Commissioner*  
THOMAS A. BASNIGHT, *Assistant Commissioner*  
N. R. WEBB, *Principal Accounting Clerk*  
MARY E. WILLIS, *Senior Stenographer*  
E. L. DUDLEY, *District Sanitary Engineer*

## DIVISION OF COMMERCE AND INDUSTRY

\*CECIL E. BELL, *Acting Industrial Engineer*  
JAMES E. COAD, *Executive Secretary, War Industries Coordination Committee*  
NELL WELLONS, *Senior Stenographer-Clerk*  
MARY LEE COWPER, *Junior Stenographer-Clerk*  
MARGARET WHITE, *Junior Stenographer-Clerk*

## DIVISION OF FORESTRY

J. S. HOLMES, *State Forester*  
W. K. BEICHLER, *Assistant State Forester*  
PHILIP A. GRIFFITHS, *Associate Forester*  
J. R. SPRATT, *Forest Inspector*  
THOMAS W. MORSE, *Superintendent of State Parks*  
L. L. MILLER, *Ass't Superintendent of State Parks*  
MRS. GRACE W. PREVOST, *Principal Accounting Clerk*  
MRS. MABEL D. YOUNG, *Senior Stenographer-Clerk*  
MRS. ELSIE EASON, *Senior Stenographer-Clerk*  
MERLE CREECH, *Junior Stenographer-Clerk*  
MRS. EDNA J. ALMAND, *Senior Stenographer-Clerk*  
DOROTHY VEREEN, *Junior Stenographer-Clerk*  
BETTY ELLINGTON, *Junior Stenographer-Clerk*

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\* J. T. Anderson served as Industrial Engineer until his death on January 14, 1942. R. W. Redwine will become part-time Assistant Industrial Engineer, August 1, 1942.

## DISTRICT FORESTERS

W. J. CLARK, Asheville  
MONTE M. YOUNG, Lenoir  
B. H. CORPENING, New Bern

ROY L. WESTERFIELD, Rocky Mount  
P. W. TILLMAN, Fayetteville

## JUNIOR FORESTERS MANAGEMENT

FRANK J. MILLER, Junior Forester, Elizabethtown

## DISTRICT FOREST RANGERS

T. E. BEGLEY, Asheville  
E. P. SIMMONS, Lenoir  
T. R. McMILLAN, Fayetteville  
F. L. HOOKER, New Bern  
E. C. FEREBEE, Rocky Mount  
A. D. WILLIAMS, Rockingham  
PAUL E. SEBRING, Fayetteville

## DISTRICT OFFICE CLERK-STENOGRAPHERS

KATHLEEN MORISON, Asheville  
MARY PULLIAM, Lenoir  
JENNIE CURRIE, Rockingham  
JESSIE REEL, New Bern  
ELIZABETH ADAMS, Rocky Mount  
ANNA M. CAMPBELL, Fayetteville

## CARETAKERS—STATE PARKS

ED WILSON, Mount Mitchell  
MRS. LOTT W. HUMPHREY,  
Fort Macon

## NURSERYMEN

Clayton Nursery  
MOODY M. CLEMMONS, Clayton  
Crab Creek Nursery  
MOLTON W. HENSLEY, Penrose

## DIVISION OF GAME AND INLAND FISHERIES

HINTON JAMES, *Commissioner*

J. D. FINDLAY, *Assistant to Commissioner*

MRS. ALICE W. AUSTELL, *Senior Stenographer-Clerk*

INA OLIVIA BROWN, *Senior Stenographer-Clerk*

EVELYN ROGERS, *Senior Account-Clerk*

## DISTRICT GAME PROTECTORS

J. A. BRADSHAW, Asheville  
E. W. CAINE, Lumberton  
RUPERT E. WEST, Moyock  
R. B. ARMFIELD, Hoffman  
C. M. CAPEL, Mount Gilead  
LARRY E. WARRINGTON, New Bern  
E. P. KEEN, Raleigh  
H. GRADY FARTHING, Boone  
FRED C. OTT, *Superintendent Game Farm, Hoffman*  
GEO. L. DAVIS, JR., *Superintendent Game Farm, Fayetteville*  
C. N. MEASE, *Chief Refuge Supervisor, Marion*  
J. H. LONGSHORE, *Chief Refuge Supervisor, Arden*  
FRANK W. EATMAN, *Coordinator, Pittman-Robertson Projects, Raleigh*  
MRS. GRACE THOMPSON, *Junior Stenographer-Clerk, Raleigh*



## GAME MANAGEMENT

WILLIS KING, *Division Biologist*, Raleigh  
ROSS O. STEVENS, *Consulting Biologist*, Raleigh  
E. V. FLOYD, *Educational Supervisor*, Raleigh  
H. C. RUCKER, *Biologist*, Charlotte  
J. C. DARSIE, *Biologist*, Asheville  
MARK TAYLOR, *Biologist*, Kinston  
J. W. KISTLER, *Biologist*, Raleigh  
MRS. GRACE BYRD, *Junior Stenographer-Clerk*, Raleigh

## FISH HATCHERY SUPERINTENDENTS

WILLIS KING, *Supervisor of Fish Resources*, Raleigh  
Morrison Hatchery, LEO F. REIGER, Waynesville  
Frank Stedman Hatchery, WRIGHT T. PARKER, Fayetteville  
"Pete" Murphy Hatchery, LUTHER SKAGGS, Marion  
Boone Hatchery, CLYDE ANDERSON, Boone  
Roaring Gap Hatchery, GUY C. WALLACE, Roaring Gap

## DIVISION OF MINERAL RESOURCES

JASPER L. STUCKEY, *State Geologist*  
\* T. G. MURDOCK, *Assistant State Geologist*  
W. A. REID, *Associate Chemist*  
CURRIE COUNCIL, *Senior Stenographer-Clerk*

## DIVISION OF STATE ADVERTISING

† CHAS. J. PARKER, *Manager*, News Bureau  
MRS. DOROTHY LEWIS, *Senior Stenographer-Clerk*  
HUGH SIMONS, *Junior General Clerk*

## DIVISION OF WATER RESOURCES AND ENGINEERING

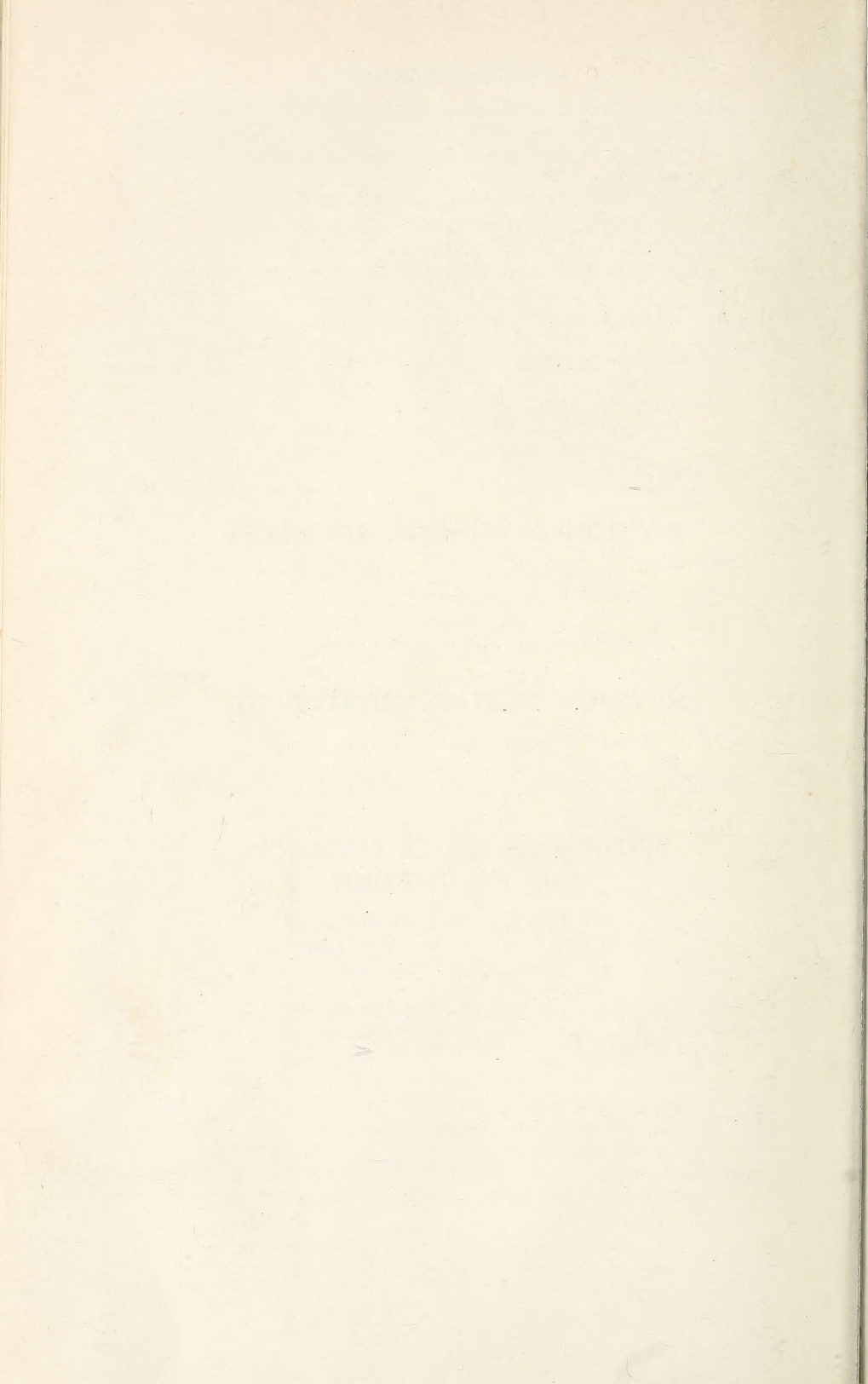
‡ W. H. RILEY, *Assistant Engineer*  
F. E. DAY, *Assistant Engineer*, Asheville  
FRANCES MOORE, *Junior Stenographer-Clerk*

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\* Resigned in July 1942. W. A. White will begin duty as Assistant State Geologist and Richard M. Barbour as Assistant Geologist in August.

† Resigned July 1, 1942. W. P. Sharpe will fill this office on August 1, 1942.

‡ T. S. Johnson resigned as Chief Engineer in May 1942.





## REPORT OF THE DIRECTOR

Even before War burst with full fury upon this country at Pearl Harbor, its lengthening shadow was gradually approaching our shores and the national economy had become materially affected.

Since that fateful December day in 1941, however, in preparation for a conflict the like of which has never been known before, every phase of life and activity has been influenced to a growing degree by "all-out warfare."

Mechanized warfare has created a demand for raw materials which few had visualized. Since leadership in the conservation and development of these natural resources in North Carolina constitutes the responsibility of this Department, the national emergency has altered its course to a greater extent than has probably been the case with most civilian activities.

The soil, the mine, the forest, and virtually every other source of raw material used in actual warfare and by the civilian population have been called upon for higher production and to make greater contributions to the common defense. Unless these demands are met, our country cannot achieve victory and our future welfare is at stake.

As our people grimly strain every effort to meet the tremendous drains upon our State's natural resources, we would not be true to our trust unless we look beyond the turmoil of today to the time when peace again will come. Then, as before, the material blessings which made us a strong and happy nation rest upon the availability of an abundance in Nature's storehouse. Thus, in winning the war, we should assure ourselves that we shall also win and enjoy a lasting peace which we all covet for our nation and the world.

America is able to defend herself today only because of the rich store of raw materials in the form of natural resources which are being utilized so freely. To remain great and powerful, and for the protection of those who come after us, we must commit ourselves anew to the task of maintaining the usefulness of these resources with the thought of preserving the right of future generations to live in a country equally as attractive as that we enjoy today.

Even in the haste of production called for today, careful consideration should be given to methods of harvesting and utilizing natural resources which will do the least damage and leave those which are renewable productive for the future.

Conservation may be termed our second line of national defense, and calls for renewed efforts to preserve the natural resources which are the source of the implements vital in the defense of our homes and liberties. Even an indomitable people, unless backed by necessary and vital resources, cannot remain strong in the face of unscrupulous enemies who seek to impose their wills by every means, fair or foul.

To the additional duties imposed by War, the Department of Conservation and Development rededicates itself cheerfully and with the resolve to do its full duty toward winning the struggle to defend our freedom and to preserve the blessings of peace to follow.

## GENERAL

*Personnel:* One of the greatest War problems is that of maintaining necessary personnel in the face of the greatest demand for man-power this country has ever faced.

Unfortunately there is no prospect for relief from this situation. As a matter of fact, the shortage of qualified personnel of every type shows every indication of becoming more acute as our armed forces expand and production of war materials increases.

The experience of the Department has been that it is almost impossible to replace key men who leave its employ for various reasons. This is particularly true in the case of technical men for which the war effort is calling in increasing numbers.

During the past several months the turn-over in personnel has been more rapid than at any time during the history of the Department. A considerable number of the staff has gone into the armed services of the country, others have accepted defense jobs, and others have gone into private industry. With the high salary scales prevailing, the Department is unable to compete and there are indications that still more of our force will accept employment elsewhere. To add to these problems, the armed services will probably call additional personnel.

To illustrate the acuteness of the personnel problem there have existed for some months vacancies in the staff in the form of positions requiring definite professional skills for which there have not only been no applicants but for which we have constantly sought qualified men. Even competent clerical help has become increasingly hard to find and still more difficult to hold. In some cases, new stenographers have worked only a few weeks before accepting more remunerative positions elsewhere.

While conditions of this kind are to be expected during war time, they are mentioned to illustrate some of the difficulties encountered not only in keeping ordinary functions alive but in meeting new demands for emergency services. There is naturally considerable lost motion involved whenever there is a change in personnel and when this is repeated many times the work suffers in proportion, even though the situation is unavoidable.

*Cooperation in National Defense:* Realizing that the most momentous task facing this, as well as all other States, is that of winning the war, the Department has gone "all out" toward this end. While many of its activities fit directly into the war effort, the contribution of others is indirect. However, through the Board, the Director, and the various Division heads, the full services of the Department have been tendered to responsible officials and virtually all of the personnel, both office and field, is performing some type of defense service. Representatives of the Department are prepared to go still further in their contributions to defense and the War effort, to the extent of the needs of the Nation and State.

## MISCELLANEOUS

*Conservation Textbook:* After many years of planning and preparation, the Department has published a fundamental textbook on conservation for the public schools of the State.

The book was written by Paul Kelly, assistant director, and J. C. Baskervill, former secretary of the Governor's Hospitality Committee, and after ap-



proval by the State Textbook Commission was turned over to that organization to be placed in the schools. Education officials have informed the Department that the text is being used in the eighth grade.

"The Story of Conservation in North Carolina," written in dialogue style, portrays the vitally important place of our natural resources in the lives of the people and sets forth in an interesting manner the uses served by the natural resources. It outlines the State's program for preserving the usefulness of the most important of these resources and attempts to arouse the interest of the pupils toward this goal.

Since the interest of the young citizens of our State is vital to any future program, particularly one whose benefits extend into the distant future, it is believed that the textbook will fill a vital need in conservation education and will prove to be one of the best investments made by the Department. It is hoped that the book may be reissued when the present edition is no longer serviceable.

*Air Markers:* As the result of a Works Progress Administration project first sponsored by the Department of Conservation and Development in 1939, with the cooperation of the Junior Chamber of Commerce of North Carolina, North Carolina had become known as one of the best marked in the country from the standpoint of aviation guides.

During two years of continuous operation, in which a minimum of State funds was used, 482 air markers in the form of names of cities and directional arrows were painted. The program was virtually completed and repaint work had been done on many of the signs.

However, the outbreak of the war altered the situation, and it became necessary to obliterate a large number of the signs within an area specified by military authorities. In all, it was necessary to remove some 252 of the signs. This work started shortly after the beginning of 1942 and was completed within a few months. Because of military reasons it is not practical to make any plans in this connection for the future.

*Historical Markers:* Launched in 1935, under the joint sponsorship of the State Historical Commission, the State Highway and Public Works Commission, and the Department of Conservation and Development, the project had gone forward steadily since that time until the outbreak of war.

Soon after the beginning of the war, work on the program was suspended because of the shortage of metals. It is contemplated that the program will be resumed as soon as practicable after the termination of hostilities.

During the biennium, prior to the suspension of the program, 100 markers had been approved. Added to the 340 which had been cast previously, the 100 for the biennium brought the grand total to 440 to date.

Necessary historical research in the program has been done by the State Historical Commission, and the inscriptions have been written by a committee consisting of some of the State's leading historians who have given their services without any compensation whatever. The historians who have contributed their time to the project are as follows: A. R. Newsome, R. D. W. Connor, H. T. Lefler, and Cecil Johnson of the University of North Carolina at Chapel Hill; D. A. Lochmiller and L. W. Barnhardt of N. C. State College; G. W. Paschal and F. W. Clonts of Wake Forest College; R. H. Woody and J. C. Robert of Duke University; and F. W. Johnston of Davidson Col-

lege. Dr. C. C. Crittenden, secretary of the State Historical Commission, also served as a member of this committee.

### DIVISIONAL ACTIVITIES

*Commercial Fisheries:* Outstanding among the accomplishments in this Division has been the establishment of the first Oyster Demonstration and Experimental farm, in cooperation with the U. S. Fish and Wildlife Service. This unit is located on North River about five miles east of Beaufort. Here a plot of some 80 acres of bottom land was laid off, planted with oysters, and a watchhouse and other improvements built.

Complete records will be kept on the type of oysters planted, the dates, and other factors which are important in the growth of the bivalve. These records will be studied and called to the attention of the public. The main purpose of the project is to encourage the private culture of oysters on 200,000 or more acres of barren bottoms in the State, by presenting a demonstration of proven and successful methods.

The oyster demonstration farm is the first in a series which the Department of Conservation and Development hopes to locate in strategic points along the coast. For many years the Department has sought by various means to encourage widespread oyster farming as a means of developing one of the most outstanding opportunities for the exploitation of the natural advantages of the State. It is the belief of the Department that hundreds of thousands and probably millions of dollars annually can be added to the income of the commercial fishermen through utilization of undeveloped shellfish opportunities.

Means for launching the program of oyster culture demonstration were provided in a special appropriation of \$10,000 by the General Assembly of 1941. The bill had the full support and backing of Gov. J. M. Broughton; and W. Roy Hampton, chairman of the committee on commercial fisheries of the Board of Conservation and Development, contributed in an important way to the passage of the appropriations measure and the successful launching of the project. The U. S. Fish and Wildlife Service, through Dr. H. F. Prytherch, aquatic biologist in charge of the station at Beaufort, in cooperation with Capt. John A. Nelson, fisheries commissioner, supervised the establishment and development of the farm.

At its July, 1942, meeting at Morehead City, the Board approved unanimously a recommendation by Governor Broughton that the two main units of the State commercial fishery patrol fleet—the *Hatteras* and the *John A. Nelson*—be turned over to the Coast Guard for duration of the War. This action was carried out shortly afterwards and the two boats are now on war duty.

Earlier in the year, the *Hatteras* had been equipped with new motors, and the engines removed from this vessel were transferred to the *John A. Nelson*. With these changes, the boats were in the best of condition when released for Federal service.

The program launched several years ago for the purpose of saving and rehabilitating the shad supply which had steadily decreased during recent years, showed evidences of bearing definite fruit. Fishermen, in many localities, reported the best catch in years during the spring season of 1942. However, it was not possible to establish satisfactory evidence of the abundance



of the fish because of the fact that the number of nets had substantially decreased with the departure of many fishermen into various branches of the services and into war work.

Statistics on catches for this biennium compared with the preceding two-year period, on account of reasons cited above, do not reflect accurately conditions, and it will probably be after the close of the war before a true appraisal can be made of the shad situation.

*Commerce and Industry:* During the two years covered by this report the experiences of this Division have been highly varied. Just what turn its field of operations would take was very much in doubt during the entire period of the early months of the war in Europe before the conflict had involved this country and had become global in scope.

In November, 1940, the establishment of a Washington office by the Division was approved by Gov. Clyde R. Hoey with the thought that speeded-up production for Lend-Lease would call for a larger output by the mills and factories of the State, and perhaps the establishment of additional plants. Ralph T. Dunaway was placed in charge of this office.

During the period of less than a year of operation of the office, active assistance was given to manufacturers of North Carolina in lining up some orders of considerable magnitude. After the office had served its immediate purpose it was closed in September 1941.

As this country approached closer to war, industry became uncertain and those which had made plans for expansion or the establishment of new plants deferred action and in most places ceased to think in these terms. As a result, inquiries and leads decreased immediately preceding and following Pearl Harbor.

It was during this period that the Federal government, through the War Production Board sought the services of James T. Anderson, who had made an outstanding record as Chief Industrial Engineer of the Division, and Cecil E. Bell, his able assistant, as head of its office and as assistant for the State. These two officials were given leaves of absence from their duties with the Department for the "duration of the War."

However, before Mr. Anderson and Mr. Bell took over officially their new duties, a major blow in the form of an automobile accident in which Mr. Anderson was instantly killed and Mr. Bell was seriously injured, fell on the Department.

During the months following this severe misfortune, the number of industrial inquiries picked up steadily. The Division was at a great disadvantage with no experienced industrial engineer on its staff for a vigorous follow-up of the inquiries. However, the affairs of the Division were looked after from the office of the Director during that period, to the extent of available time and facilities.

The situation was relieved to some extent with the return of Mr. Bell to the Division following his recovery, but the work has continued at a disadvantage because of limited industrial engineering assistance available and during a period when the number of prospects had unexpectedly reached the highest peak experienced.

Following the outbreak of hostilities, there was a period of readjustment prior to the high-gearred program for the conversion of industry to war-time production. Consequently, for some weeks after Pearl Harbor, because of the



uncertainties of the times and during the period of waiting to "catch step," the activity toward expansion in the State was limited.

Inquiries concerning new plant sites and available buildings picked up. This acceleration in activities of the Division reached the highest momentum ever experienced after a series of display advertisements pointing to available facilities in North Carolina was run.

Near the close of the biennium arrangements had been made to add Robert W. Redwine to the staff of the Division on a part-time basis. Mr. Redwine is the North Carolina representative for Eastman, Scott & Company which handles the State's advertising account. His experience in assembling and writing industrial advertising copy and his other training and background appear to make him admirably suited for the work.

The activities of the Division, to meet War-time needs, were expanded about a month prior to the close of the biennium by the establishment of the Committee on War Industrial Coordination by Gov. J. Melville Broughton.

To date, the Committee has been working toward two primary objectives—increased participation by North Carolina industries in turning out needed war materials and assistance in bringing war contracts to plants which must convert their production to the needs of the hour.

The Committee approved the selection of James E. Coad, secretary of the Hickory Chamber of Commerce as its secretary, and Mr. Coad was given a leave of absence from his duties there. Within a period of one month, Mr. Coad organized his work and has already assisted in lining up several contracts which will help keep several plants busy over a period of months.

Besides the numerous instances in which Mr. Coad has been active in cooperating with various groups and industries toward bringing orders for the armed services to North Carolina mills, he has helped to expand greatly the number of concerns in this State bidding on war requirements by supplying information concerning the procedure in getting war contracts. As a result, many manufacturers who had not previously sought war orders are now bidding directly with the various purchasing agencies.

Devoting initial efforts first to those lines of industry where the need of immediate business was most urgent, the Committee is extending its service to every line of manufacturing where conversion to war production is necessary for continued operation and to those which need supplemental orders.

Although, as already indicated, even though the work of the Committee had been in progress only a month before the close of the biennium, it has proven its usefulness and service in a definite and material way by contributing to the general war effort and helping industry to bridge over a difficult transitory condition. The efforts of the Committee give indication not only of temporary benefits during the emergency but a permanent contribution to the future industrial development of the State.

Members of the Committee are serving purely as interested citizens in a voluntary capacity without remuneration of any kind. They are performing a most helpful and patriotic service to the State and Nation. J. Ed Millis, of High Point, is chairman; and Russell F. Hall, of Greensboro, is vice-chairman.

*Forestry:* Forestry which received its greatest impetus through recovery measures put into effect several years ago has redoubled in importance since the beginning of the War.

In the face of the increased scope of activities and responsibilities, the

personnel problem has been acute in this Division. Plans for a reorganization of the administrative personnel were worked in 1941 and State Forester J. S. Holmes, after 32 years of constructive, active and useful service, was given a semi-retired status but the arrangement was abandoned a few months later because of the departure of certain key men for military service and war work.

State Forester Holmes went on a half-time basis on December 1, 1941, but was called back to full duty on March 1, 1942. The original idea of the change was to relieve the State Forester of many of the more arduous administrative duties in view of his long service but to retain the advantage of his advice and experience through his retention in the less exacting part-time capacity. So great was his interest and concern in his work, even when put on a half-time basis, he insisted on giving virtually his full time to the program.

Numerous other changes in both the administrative and clerical personnel have been experienced during the biennium. These are recounted in the report of the Division of Forestry.

Of the various phases of forestry, the major war-time emphasis has been centered on fire protection, which is the basic feature of the program. Fire is the principal enemy of our forests, and the control of this evil is not only essential in maintaining the productivity of our woodlands but also in certain other vital defense aspects.

Control of fires is more necessary during this period of unusual drain on the forests than ever before. Estimates of the use of timber by the U. S. Appalachian Forest Experiment Station in October 1941—the rate of cutting has increased tremendously since that time—show the annual drain above the growth to be at the rate of 147,000,000 board feet annually. The logical way to reduce this drain is by reducing the mortality from fire.

That North Carolina has not provided for fire protection in proportion to other States in the southeast is shown by the fact that the total forest fire budget allowed only 1.8 cents per acre for this work, the lowest of any of the southeastern States. By comparison, there was available last fiscal year an average of 8.5 cents per acre for forest fire control in Florida; 5.8 cents in Louisiana; 5.2 cents in Georgia; 3.8 cents in South Carolina; and 2.9 cents in Alabama.

Forest fires are doubly damaging during war time by creating a pall of smoke which interferes with submarine detection and air raid warning service, by using scarce man-power for the unproductive work of suppression, by hampering flying and artillery training, by endangering power lines and war plants, by burning forest products vital to war efforts, and in other ways.

Expansion of forest management practices through demonstrations and advice to forest land owners is another phase of forestry which should have particular war emphasis. These measures assist in closer utilization of forest products and help to insure continuous production for the future.

During the past several years, and up until the outbreak of hostilities, steady progress had been made in the acquisition and development of a State Park system. There are now 11 units in the State Park system, and a complete system, as recommended in the North Carolina Park, Parkway and Recreational Area study, includes the establishment of several additional units in order that minimum needs for servicing all the people of the State may be met.



With the withdrawal of the last of the Civilian Conservation Corps camps from State Park work this biennium, development of these areas virtually came to a standstill, and since this phase of the work depended almost entirely on these camps the program will necessarily be held up until these or other facilities are available.

War conditions made advisable operations curtailment in the parks and recreational areas. None of the parks, therefore, were in operation during the summer of 1942, but all were kept open to the public for picnicking, camping, hiking, nature study and other uses which did not require additional personnel and expenditures.

Parks and recreational areas have served in many cases directly in the War effort. Two—Fort Macon and the Sandhills Recreational Area—have been taken over by military units for "the duration" and others, including Morrow Mountain State Park and Crabtree Creek Recreational Area, have served in other ways.

*Game and Inland Fisheries:* After serving as Commissioner of Game and Inland Fisheries since April 15, 1934, John D. Chalk, on May 1, 1941, resigned this position to return to private business at his home in Rockingham. He was succeeded by Hinton James, of Laurinburg. During the incumbency of Mr. Chalk, the wildlife program of the State made noteworthy progress. Mr. James brings to the office an outdoor background and experience which fits him to carry on the constructive program now under way. This Division, which reported its largest receipts from hunting and fishing licenses during the fiscal year 1941-42, faces a crisis in the forthcoming biennium through a combination of circumstances brought on by the war.

With travel limited by the decreased availability of automobiles, tires, and gasoline, added to a threatened scarcity of ammunition, which indicate a decrease in the sale of licenses, the Division faces a severe curtailment in its program.

Effective June 15, 1942, the War Production Board issued an order for the discontinuation of the manufacture of sporting ammunition. However, according to information reaching the Department, the stock of ammunition already manufactured, if made available to the hunters, should be sufficient for the current season, and perhaps longer.

All of these combine to indicate a decrease in revenue and, therefore, a reduction in the operating budget of the Division. Anticipating such a development, steps were taken before the close of the current fiscal year toward retrenchment. As a result there was a carry-over of \$91,633.46 in the game fund at the end of this biennium, an amount more than double the \$42,954.60 of the previous year. The balance in the inland fisheries fund was \$30,806.32, compared with \$39,928.36 the previous year. While these amounts will help, they are not expected to absorb the decrease in collections which seems inevitable.

During the biennium, a series of public deer hunts was inaugurated on the Holly Shelter Wildlife Area in Pender County. The hunt was conducted in 1941 and is planned for 1942. The first hunt justified itself through the public response. Apparently the hunt filled a need for public deer hunting facilities at a modest fee.

Under the plan followed by the Division of Game and Inland Fisheries, a fee of \$2.00 covered the entire cost of the hunt to the sportsmen, including



the special fee and dog and guide services. These hunts are held under expert management, and are part of a carefully planned game management procedure. Prior to each hunt, estimates will be made of the deer population and definite limitations will be placed on the number of bucks which hunters will be allowed to take during the open period. No drains have been made on the deer population since the maximum hunt limit is set at less than the previously determined normal increase in stock.

One of the most pleasing developments of the biennium has been the arrival at an agreement between officials of the U. S. Forest Service and the Department on the annual deer hunt in the Pisgah National Game Refuge area. As a result of this agreement, every feature of the North Carolina Game Law is to be observed in the hunt this fall. Further progress in an understanding between the two groups of officials is the inclusion of the Pisgah Refuge area in the system of State-Federal Cooperative Wildlife Management Areas. This brings the total of these areas to 293,187 acres.

*Mineral Resources:* In many ways, the past biennium has been one of the most eventful periods in the history of the geological work of the Department, and the Division of Mineral Resources has probably more nearly met demands for service through increased facilities than during any similar period of its existence.

War has intensified to an unprecedented degree the demand for additional information concerning the mineral deposits of North Carolina. To meet these demands, plans have been made to expand the geological force of the Division.

During the period of this report, the personnel of the Division has changed entirely, and during a period of greatly accelerated activity this has necessarily resulted in some lost motion to permit new geologists on the job to familiarize themselves with the particular problems involved in the work. Fortunately in each case, those men who have left the Division have been replaced by others who were generally familiar with the geology of the State.

On April 30, 1940, shortly before the end of the last biennium, H. J. Bryson, who had served as State Geologist for about 14 years, left the Department for private business. Dr. Jasper L. Stuckey, professor of geology at N. C. State College, on July 1, 1940, became State geologist on a part-time basis. Dr. Stucky had filled the same position prior to the time he went to State College and was succeeded by Mr. Bryson.

On August 1, 1940, T. G. Murdock, a native North Carolinian who had been engaged in the mining engineering field in Central and South America for some 12 years, became Assistant State Geologist. Mr. Murdock served in this capacity until shortly before the close of the current biennium when he resigned to go with the Board of Economic Warfare. His first assignment was in South America. During his stay with the Department, Mr. Murdock made some valuable contributions to the geological work of the State.

Following Mr. Murdock's departure, the Division was badly handicapped in meeting calls from the Federal government and private industry for more complete information on numerous minerals of vital importance to the country in the war-time program, to replace materials which could no longer be had in necessary quantities from abroad and to meet new needs for armaments.

Minerals which were known to exist in the State but which have not hitherto been produced in quantity assumed a place of greater importance in the all-out war program. Others which had previously not been exploited to any extent were called for in great quantities.

To meet these calls for more thorough information on strategic and critical minerals, studies were undertaken in cooperation with the Tennessee Valley Authority and the U. S. Geological Survey, and arrangements were made through Gov. J. M. Broughton to employ an extra geologist, which will give the Division a staff of one part-time geologist and two assistants. These two assistants are scheduled to begin their duties in August, 1942.

As a result of the accentuated geological program, several new studies were undertaken and some completed during the biennium. A report on olivine, a promising source of metallic magnesium, was issued in cooperation with the TVA, and field work was completed on copper, chromite, and vermiculite. Reports on the last three studies are expected to go to the printer for publication before the end of the current calendar year.

Besides these more comprehensive reports, two informal publications entitled "Minerals for National Defense—North Carolina's Possible Contribution," and "Mica Production in North Carolina," were issued in mimeograph form.

One of the most interesting mineral developments of the biennium has been in connection with the ilmenite, a source of titanium oxide, mixed through the sands at the bottom of Albemarle Sound and tributaries.

For some years the existence of the mineral in these waters had been known, and the General Assembly of 1937, in Chapter 385 of the Public Laws of that year, authorized the Department of Conservation and Development to promote the development of the deposits through lease, royalties, or by other means.

The supply of ilmenite, from which is manufactured titanium oxide, a white pigment useful in colors and paints and in other industries, has formerly come chiefly from the Orient. When importations were cut off because of the War, interest was focused on domestic supplies and the I. E. du Pont de Nemours and Company, of Delaware, began investigations in the Albemarle Sound.

After considerable study of the deposits, du Pont officials entered into a contract with the Department of Conservation and Development in February 1942, for the production of ilmenite on a royalty basis. The company carried out over a period of several months studies and experiments on the recovery of the mineral, but had not begun production at the end of the biennium. The Department has not been informed when operations will be started.

*State Advertising:* In 1937, the first formal and systematic program to promote the development of the State's resources was launched and has been carried forward since that time under carefully laid plans.

Originally a three-fold objective was laid out and followed. These three objectives are (1) the attraction of tourists, (2) development of industry, and (3) the bringing of homeseekers and scientific farmers into the State.

The effects of the campaign have been cumulative. Careful studies and observations show a steady increase in the tourist business of the State since the beginning of the program, starting with estimated expenditures of some \$35,000,000 in 1937 and reaching more than \$100,000,000 in 1941. The summer



of 1941 was generally accredited by tourist and resort operators as being the best ever experienced in North Carolina. The increased tourist expenditures have, of course, been reflected first in the principal resort areas which are scattered throughout the State but have spread out directly or indirectly into every portion of the commonwealth.

Even before war actually came to this country, there were indications that certain changes in policies and new emphasis would be advisable in the conduct of the program.

After hostilities began and while national policies were being fixed, it was increasingly evident that the State Advertising program must be made fluid or adaptable to changing conditions. In every way, procedure was made to fit into war plans and to conform to procedure to the best interests of the Nation and State.

Travel difficulties developed but federal officials adhered to the belief that relaxation and recreation are essential to public welfare and morale. Limited tourist schedules were, therefore, continued into the summer of 1942, but only publications which could accept copy within a few days of issue dates were used, with the thought that orders could be cancelled on short notice if the public welfare so dictated.

As the war effort demonstrated the demands for larger production of foodstuffs for our own nation and allies, increasing attention was devoted to advertising copy appealing to successful farmers in other states who might boost their production in North Carolina. Special appeals were made to dairymen, poultrymen, and live-stock producers to locate in the State and help supply some of the deficiencies of these products. Several series of advertisements of this nature have been run in leading farm papers of the country.

Major emphasis has been placed on industrial copy pointing out raw materials, particularly the minerals, offered by North Carolina as a contribution to the war effort. Other advantages, such as native and intelligent labor, congenial climate, plant sites, and available buildings were also stressed.

Results from this type of advertising were surprising even to the most optimistic. More than 100 inquiries were received from one series of advertisements. Many of those who contacted the Department as a result of reading the copy were among the leading firms of the country.

This Division has experienced a substantial shift in personnel. Robert L. Thompson, who was manager of the News Bureau at the beginning of the biennium, resigned on February 1, 1941, and was succeeded by Charles J. Parker, who has resigned effective August 1, 1942. Mr. Parker is to be succeeded by W. P. Sharpe, first head of the News Bureau. From its organization, the News Bureau has been fortunate in the quality of its heads. All these occupants of the position have been experienced and well-qualified men who have carried out their duties efficiently.

Other members of the staff who have left during the biennium for employment elsewhere include J. C. Baskervill, secretary of the Governor's Hospitality Committee; W. R. Baker, photographer; and Mrs. Ruth Robinson, office manager. Each of these served faithfully and efficiently.

*Water Resources and Engineering:* Personnel problems have been particularly acute in this Division because of the difficulty in obtaining engineering help.



For some years, the Division was headed by T. S. Johnson, a member of the engineering faculty at N. C. State College, as chief engineer. Under normal plans of operation, the chief engineer furnished direction to the work of the Division and the office details and routine were carried out by a full-time assistant.

The position of assistant engineer was filled for only eight months of the biennium. Robert H. Grady served in this capacity from July 1, 1941 through February 1942. Immediately after the beginning of the war, Mr. Johnson was appointed as Director of the State Office of Civilian Defense, and he continued for a while to divide his time between this work and that of the Division. However, in May 1942, Mr. Johnson resigned as chief engineer of the Division to devote all his time to the position of State Director of the Office of Price Administration.

A continuous search for an assistant engineer for months prior to the departure of Mr. Johnson failed in so far as locating a suitable man for the position is concerned. When Mr. Johnson left, the Division was without the services of either a chief or an assistant engineer and we have not been successful in filling either position.

On account of the scarcity of engineers, the Department has planned to combine the two offices temporarily, if a suitable engineer can be located. On account of the shortage in personnel, it has been possible to carry on only routine work under the direction of W. H. Riley, who under agreement with the U. S. Geological Survey, spends his full time in stream gaging activities. Other normal activities of the Division have necessarily had to be suspended until an engineer can be employed.

Among the more basic problems facing the Division is that of stream pollution, which will become progressively more important with the growing industrialization of the State. Some attention was given to matters of this nature during the biennium, but the lack of personnel has proven a handicap which could not be overcome. This is one of the most pressing problems due for thorough consideration and study when facilities are available.

The Division was able during the biennium to resume chemical analyses of the industrial waters of the State. Raleigh T. Daniel began this work in September 1941, but it was dropped in May 1942 when Mr. Daniel went into service. This project was launched primarily to furnish information required for promoting the industrial growth of the State by supplying data on chemical qualities of waters essential in locating many manufacturing plants.

In one respect the Division has been fortunate during the biennium. This is in the continuation without interruption of stream gaging program, its major activity. These records are vital to provide fundamental information for many of the problems involving the water resources of the State. At the present time, 124 gaging stations are being operated in conjunction with the U. S. Geological Survey and other coöperators.

**APPROPRIATIONS DIVISIONS**  
**STATEMENT OF RECEIPTS AND DISBURSEMENTS**  
**Biennium 1940-1942**

	1940-41	1941-42
<b>I. ADMINISTRATION:</b>		
<i>Board of Directors Attending Meetings</i> .....	\$ 305.39	\$ 1,743.68
<i>Director's Office:</i>		
Salary, Director.....	6,000.00	6,000.00
Salaries, Staff.....	9,284.17	9,501.67
Supplies and Materials.....	344.49	427.59
Postage, Telephone, Telegrams and Express.....	650.85	379.41
Travel Expense.....	647.54	517.41
Printing and Binding.....	814.71	177.07
Repairs and Alterations.....	48.83	107.80
General Expense.....	140.90	144.57
Equipment.....	38.16	107.45
<b>TOTAL</b> .....	<b>\$ 18,275.04</b>	<b>\$ 19,106.65</b>
<b>Less Receipts:</b>		
Sale of Publications.....	121.40	69.00
Game and Fish—Attending Board Meetings.....		400.00
<b>TOTAL RECEIPTS</b> .....	<b>\$ 121.40</b>	<b>\$ 469.00</b>
<b>APPROPRIATION</b> .....	<b>\$ 18,153.64</b>	<b>\$ 18,637.65</b>
<b>II. COMMERCE AND INDUSTRY AND ADVERTISING:</b>		
<b>COMMERCE AND INDUSTRY:</b>		
<i>Raleigh Office:</i>		
Salaries, Staff.....	\$ 7,690.00	\$ 9,733.50
Supplies and Materials.....	135.64	298.29
Postage, Telephone, Telegrams.....	1,000.67	1,100.39
Travel Expense.....	1,594.65	2,203.97
Printing and Binding—Transferred to Succeeding Year.....	487.00	
Printing and Binding.....	205.31	922.97
Repairs and Alterations.....		5.59
General Expense.....	225.00	302.54
Equipment.....	46.73	97.81
Workmen's Compensation.....		632.00
<b>TOTAL</b> .....	<b>\$ 11,385.00</b>	<b>\$ 15,297.06</b>
<i>Washington Office:</i>		
Salaries, Staff.....	\$ 4,074.00	\$ 2,023.00
Supplies and Materials.....	262.23	8.25
Postage, Telephone and Telegraph.....	1,920.96	639.69
Field Travel.....	4,223.95	745.50
Printing and Binding—Transferred to Succeeding Year.....	324.00	
Printing and Binding.....	161.90	
General Expense.....	2,348.61	694.19
Equipment.....	587.34	35.42
<b>TOTAL</b> .....	<b>\$ 13,902.99</b>	<b>\$ 4,146.05</b>
<b>TOTAL COMMERCE AND INDUSTRY</b> .....	<b>\$ 25,287.99</b>	<b>\$ 19,443.11</b>
<b>ADVERTISING:</b>		
Salaries and Wages.....	\$ 12,321.67	\$ 9,691.66
Supplies and Materials.....	3,423.63	2,564.77



APPROPRIATIONS DIVISIONS — *Continued*

	1940-41	1941-42
<b>II. COMMERCE AND INDUSTRY AND ADVERTISING—Continued:</b>		
ADVERTISING—Continued:		
Postage, Telephone, Telegraph and Express.....	\$ 4,637.83	\$ 3,583.44
Travel Expense.....	4,100.00	1,752.52
Printing and Binding—Transferred to Succeeding Year.....	4,998.29	
Printing and Binding.....	7,088.81	8,802.08
Repairs and Alterations.....	59.31	54.41
Direct Advertising.....	61,749.97	58,184.62
General Expense.....	696.10	1,627.35
Equipment.....	799.23	251.50
TOTAL ADVERTISING DIVISION.....	\$ 99,874.84	\$ 86,512.35
TOTAL COMMERCE AND INDUSTRY AND ADVERTISING.....	\$ 125,162.83	\$ 105,955.46
Less Receipts:		
Sale of Publications.....	158.00	135.00
Transferred from Preceding Year (Printing).....		5,809.29
TOTAL RECEIPTS.....	\$ 158.00	\$ 5,944.29
APPROPRIATION.....	\$ 125,004.83	\$ 100,011.17
<b>III. WATER RESOURCES:</b>		
Salaries and Wages.....	\$ 7,700.86	\$ 9,285.00
Supplies and Materials.....	272.39	667.27
Postage, Telephone, Telegraph, and Express.....	155.72	79.81
Travel Expense.....	791.40	978.27
Printing and Binding.....	29.83	32.18
Motor Vehicle Operation.....	826.16	702.57
Repairs and Alterations.....	63.83	420.44
Cooperation, U. S. Geological Survey.....	13,300.00	7,500.00
General Expense.....	25.24	5.00
Equipment.....	212.08	735.39
TOTAL.....	\$ 23,377.51	\$ 20,405.93
Less Receipts:		
Private Cooperation.....	957.75	953.38
APPROPRIATION.....	\$ 22,419.76	\$ 19,452.55
<b>IV. MINERAL RESOURCES:</b>		
Salaries and Wages.....	\$ 5,665.00	\$ 5,772.50
Supplies and Materials.....	149.31	161.89
Postage, Telephone, and Telegraph.....	88.89	86.22
Travel Expense.....	303.99	611.85
Printing and Binding.....	270.83	782.89
Motor Vehicle Operation.....	236.42	292.66
Repairs and Alterations.....	42.00	27.32
General Expense.....	37.38	16.19
Equipment.....	736.98	131.51
Cooperation, U. S. Geological Survey—Ground Water Study.....		2,600.00
Study of Pegmatites—Cooperation, U. S. Geological Survey.....		1,970.00
APPROPRIATION.....	\$ 7,530.80	\$ 12,453.03



APPROPRIATIONS DIVISIONS — *Continued*

	1940-41	1941-42
<b>V. FOREST FIRE PREVENTION:</b>		
<i>Administration:</i>		
Salaries—Staff.....	\$ 11,340.70	\$ 12,746.68
Supplies and Materials.....	121.84	139.86
Postage, Telephone, Telegraph, and Express.....	609.75	538.29
Travel Expense.....	793.37	573.65
Printing and Binding.....	362.15	312.44
Motor Vehicle Operation.....	701.49	818.65
Repairs and Alterations.....	15.48	28.49
Equipment.....	146.69	223.01
Motor Vehicle Exchange.....	1,569.15	1,382.98
Workmen's Compensation.....	3,500.81	1,062.18
<b>TOTAL.....</b>	<b>\$ 19,161.43</b>	<b>\$ 17,826.23</b>
<i>Cooperative Projects:</i>		
Salaries—Wardens and Rangers.....	\$ 68,479.66	\$ 74,357.16
Wages—Towermen and Firemen.....	25,185.42	28,276.39
Expense—Fire Wardens.....	4,010.62	6,172.29
Fire Control Equipment.....	5,636.04	13,134.82
Equipment—Repairs.....	3,493.68	5,023.23
Lookout Towers.....	142.18	397.78
Telephone Lines.....	883.95	1,130.14
Buildings.....	314.50	751.77
Roads and Fire Lines.....	1,460.37	2,711.30
Fire Suppression.....	16,873.49	19,764.08
<b>TOTAL.....</b>	<b>\$ 126,479.91</b>	<b>\$ 151,718.96</b>
<i>District No. 1—Asheville:</i>		
Salaries and Wages.....	\$ 2,730.00	\$ 4,426.25
Postage, Telephone, Telegrams.....	167.25	152.90
Travel Expense.....	545.21	387.92
Motor Vehicle Operation.....	479.13	870.89
Rents.....	120.00	120.00
<b>TOTAL.....</b>	<b>\$ 4,041.59</b>	<b>\$ 5,957.96</b>
<i>District No. 2—Lenoir:</i>		
Salaries and Wages.....	\$ 5,442.00	\$ 4,845.00
Postage, Telephone, and Telegraph.....	174.27	158.16
Travel Expense.....	207.69	222.96
Motor Vehicle Operation.....	927.59	1,056.67
Rents.....	150.00	95.00
<b>TOTAL.....</b>	<b>\$ 6,901.55</b>	<b>\$ 6,377.79</b>
<i>District No. 3—Rockingham:</i>		
Salaries—Staff.....	\$ 2,506.25	\$ 2,540.00
Postage, Telephone, and Telegraph.....	175.73	182.78
Travel Expense.....	244.07	259.34
Motor Vehicle Operation.....	575.02	696.28
<b>TOTAL.....</b>	<b>\$ 3,501.07</b>	<b>\$ 3,678.40</b>

APPROPRIATIONS DIVISIONS — *Continued*

	1940-41	1941-42
<b>V. FOREST FIRE PREVENTION—Continued:</b>		
<i>District No. 4—New Bern:</i>		
Salaries and Wages.....	\$ 4,815.00	\$ 4,846.50
Postage, Telephone, and Telegraph.....	216.51	240.15
Travel Expense.....	229.65	281.55
Motor Vehicle Operation.....	681.63	950.00
Lights.....	6.50	9.60
<b>TOTAL.....</b>	<b>\$ 5,949.29</b>	<b>\$ 6,327.80</b>
<i>District No. 5—Rocky Mount:</i>		
Salaries and Wages.....	\$ 4,489.00	\$ 4,560.00
Postage, Telephone, and Telegraph.....	222.77	229.81
Travel Expense.....	311.20	305.40
Motor Vehicle Operation.....	859.56	989.78
Lights.....	22.80	18.00
Rents.....	50.00	
<b>TOTAL.....</b>	<b>\$ 5,955.33</b>	<b>\$ 6,102.99</b>
<i>District No. 6—Fayetteville:</i>		
Salaries and Wages.....	\$ 7,304.00	\$ 6,274.00
Postage, Telephone and Telegraph.....	220.29	202.25
Travel Expense.....	775.27	691.75
Motor Vehicle Operation.....	1,231.92	1,340.94
Lights.....	10.32	12.00
<b>TOTAL.....</b>	<b>\$ 9,541.80</b>	<b>\$ 8,520.94</b>
<b>TOTAL DISBURSEMENTS.....</b>	<b>\$ 181,531.97</b>	<b>\$ 206,511.07</b>
Less Receipts:		
Federal Cooperation.....	65,447.00	73,022.53
County Cooperation.....	55,796.09	61,882.15
Private Cooperation.....	11,060.13	10,201.39
Donation from Game Fund.....	8,750.00	
<b>TOTAL RECEIPTS.....</b>	<b>\$ 141,053.22</b>	<b>\$ 145,106.07</b>
<b>APPROPRIATION.....</b>	<b>\$ 40,478.75</b>	<b>\$ 61,405.00</b>
<b>VI. GENERAL FORESTRY:</b>		
Salaries and Wages.....	\$ 4,680.00	\$ 5,192.75
Supplies and Materials.....	67.00	52.75
Postage, Telephone, Telegraph, and Express.....	133.74	144.86
Travel Expense.....	138.48	145.18
Printing and Binding.....	23.85	22.75
General Expense.....		15.35
Office Equipment.....	4.25	74.76
<b>TOTAL.....</b>	<b>\$ 5,047.32</b>	<b>\$ 5,648.40</b>
<b>VII. STATE FORESTS AND PARKS:</b>		
Salaries and Wages.....	\$ 16,269.79	\$ 17,671.44
Labor.....	1,681.66	2,852.14
Supplies and Materials.....	1,218.54	1,530.36
Postage, Telephone, Telegraph, and Express.....	274.57	331.34



APPROPRIATIONS DIVISIONS — *Continued*

	1940-41	1941-42
<b>VII. STATE FORESTS AND PARKS—Continued:</b>		
Travel Expense.....	\$ 674.87	\$ 524.96
Printing and Binding.....	255.13	206.39
Motor Vehicle Operation.....	2,654.12	3,560.81
Lights and Power.....	1,175.97	926.37
Repairs and Alterations.....	1,041.07	1,419.54
General Expense.....	1,399.26	895.91
Fire Insurance.....	1,496.25	713.30
Equipment.....	3,739.91	2,171.44
Motor Vehicle Exchange.....	2,175.27	1,078.28
Constructing Roads and Trails.....	1,895.01	489.23
Buildings and Other Structures.....	7,344.20	5,640.49
Water and Sewer Systems.....	601.47	1,621.00
Stores for Resale.....	3,298.93	2,859.99
Constructing of Cabins—Morrow Mountain Park.....		6,000.00
Mount Mitchell Motor Road.....	8,064.15	
Land Acquisition.....	926.60	
<b>TOTAL.....</b>	<b>\$ 56,186.77</b>	<b>\$ 50,492.99</b>
Less Receipts:		
Permits State Lakes.....	188.25	484.70
Park Concessions.....	14,155.47	13,535.49
Receipts from Highway Commission—Mt. Mitchell Motor Road.....	8,064.15	
<b>TOTAL RECEIPTS.....</b>	<b>\$ 22,407.87</b>	<b>\$ 14,020.19</b>
<b>APPROPRIATION.....</b>	<b>\$ 33,778.90</b>	<b>\$ 36,472.80</b>
<b>VIII. FOREST MANAGEMENT:</b>		
Salaries and Wages.....	\$ 8,358.50	\$ 9,165.17
Labor.....	2,443.88	4,686.77
Supplies and Materials.....	1,632.41	1,848.93
Postage, Telephone, and Telegraph.....	636.64	704.27
Travel Expense.....	684.63	710.76
Printing.....	45.44	90.24
Motor Vehicle Operation.....	1,462.66	2,349.00
Lights and Power.....	344.76	248.01
Repairs and Alterations.....	7.94	92.37
General Expense.....	166.53	113.48
Insurance and Bonding.....	118.25	112.76
Equipment.....	1,798.73	2,017.80
Additions, Mt. Nursery—Transferred to Succeeding Year.....	2,600.00	
Additions, Mt. Nursery.....		2,681.80
Additions, Clayton Nursery.....	86.25	
Marketing Timber—Bladen Lakes.....		4,478.16
Seedlings for Resale.....		1,000.50
<b>TOTAL.....</b>	<b>\$ 20,386.62</b>	<b>\$ 30,300.02</b>
Less Receipts:		
Federal Coöperation.....	2,170.28	2,596.84
Sale of Seedlings.....	7,254.37	3,900.61

APPROPRIATIONS DIVISIONS — *Continued*

	1940-41	1941-42
VIII. FOREST MANAGEMENT— <i>Continued</i> :		
Bladen Lakes—Land-use Area.....	\$ 900.07	\$ 9,095.26
Transferred from Preceding Year (Land).....		2,600.00
TOTAL RECEIPTS.....	\$ 10,324.72	\$ 18,192.71
APPROPRIATION.....	\$ 10,061.90	\$ 12,107.31
MISCELLANEOUS ACCOUNTS:		
Air Commerce Markers.....	\$ 774.99	\$ 229.33
Printing Conservation Textbook—Transferred to Succeeding Year.....	10,873.00	
Printing Conservation Textbook.....	476.93	11,270.78
Lake Waccamaw Spillway.....		10,000.00
Roan Mt. Right-of-Way.....		2,250.00
Bladen County Land.....		65.60
Rebuilding Lake Rim Dam.....		8,773.05
TOTAL.....	\$ 12,124.92	\$ 32,588.76
Less Receipts:		
Transferred from Preceding Year.....	775.98	10,873.00
APPROPRIATION.....	\$ 11,348.94	\$ 21,715.76
TOTAL DISBURSEMENTS.....	\$ 449,623.78	\$ 483,462.31
LESS TOTAL RECEIPTS.....	175,798.94	195,558.64
TOTAL APPROPRIATION.....	\$ 273,824.84	\$ 287,903.67



## DIVISION OF GAME AND INLAND FISHERIES

## STATEMENT OF RECEIPTS AND DISBURSEMENTS

Biennium 1940-1942

	1940-41	1941-42
<b>VII. INLAND FISHERIES:</b>		
<i>Administration:</i>		
Salary—Supervisor.....	\$ 2,468.20	\$ 5,479.30
Salaries—Wardens.....	24,000.00	30,000.00
Supplies and Materials.....	755.86	903.39
Postage, Telephone, and Telegraph.....	204.90	200.02
Travel Expense.....	2,015.48	1,434.76
Printing and Binding.....	759.17	924.21
Motor Vehicle Operation.....		236.74
General Expense.....	228.70	
Insurance and Bonding.....		283.83
Equipment.....	544.00	390.60
Rents.....		100.00
Legal Notices.....		96.20
Motor Vehicle Exchange.....		736.60
<b>TOTAL.....</b>	<b>\$ 30,979.31</b>	<b>\$ 40,785.65</b>
<i>Morrison Hatchery:</i>		
Salaries and Wages.....	\$ 3,454.80	\$ 3,924.60
Supplies and Materials.....	5,178.00	7,192.53
Postage, Telephone, and Telegraph.....	87.99	74.74
Travel Expense.....	56.35	62.00
Motor Vehicle Operation.....	731.31	883.97
Lights and Power.....	46.63	91.09
Repairs and Alterations.....	201.24	165.75
Equipment.....	9.68	123.92
Motor Vehicle Exchange.....	557.25	370.00
Buildings and Improvements.....	479.15	780.32
<b>TOTAL.....</b>	<b>\$ 10,802.40</b>	<b>\$ 13,668.92</b>
<i>Murphy Hatchery:</i>		
Salaries and Wages.....	\$ 1,640.65	\$ 2,424.77
Supplies and Materials.....	2,255.73	2,668.95
Postage, Telephone, and Telegraph.....	40.20	51.25
Travel Expense.....	31.30	24.10
Motor Vehicle Operation.....	645.37	405.65
Lights and Power.....		6.50
Repairs and Alterations.....	536.84	2,414.33
Equipment.....		169.38
<b>TOTAL.....</b>	<b>\$ 5,150.09</b>	<b>\$ 8,164.93</b>
<i>Stedman Hatchery:</i>		
Salaries and Wages.....	\$ 2,748.57	\$ 2,821.20
Supplies and Materials.....	1,339.39	1,522.43
Postage, Telephone, Telegraph, and Express.....	149.47	88.86
Travel Expense.....	83.15	132.92
Motor Vehicle Operation.....	1,474.92	1,229.35
Lights and Power.....	181.37	174.47
Repairs and Alterations.....	672.50	668.28
Equipment.....	20.58	139.91

## DIVISION OF GAME AND INLAND FISHERIES—Continued

	1940-41	1941-42
<b>VII. INLAND FISHERIES—Continued:</b>		
<i>Stedman Hatchery—Continued:</i>		
Motor Vehicle Exchange.....	\$ .....\$	\$ 884.89
Buildings and Improvements.....	190.00	30.52
TOTAL.....	\$ 6,818.79	\$ 7,692.83
<i>Roaring Gap Hatchery:</i>		
Salaries and Wages.....	\$ 2,561.20	\$ 2,490.00
Supplies and Materials.....	2,563.92	2,573.92
Postage, Telephone, Telegraph, and Express.....	49.83	57.97
Travel Expense.....	24.60	27.50
Motor Vehicle Operation.....	299.17	355.70
Lights and Power.....	122.85	144.94
Repairs and Alterations.....	274.49	464.11
Equipment.....	19.90	45.56
Motor Vehicle Exchange.....	650.00	-----
Buildings and Improvements.....	253.55	192.20
TOTAL.....	\$ 6,819.51	\$ 6,351.90
<i>Boone Hatchery:</i>		
Salaries and Wages.....	\$ 1,953.00	\$ 1,558.70
Supplies and Materials.....	2,359.47	2,580.75
Postage, Telephone, Telegraph, and Express.....	4.54	5.34
Travel Expense.....	14.75	-----
Motor Vehicle Operation.....	509.26	300.99
Lights and Power.....	-----	77.23
Equipment.....	80.00	-----
Motor Vehicle Exchange.....	379.25	-----
Repairs and Alterations.....	131.65	162.17
TOTAL.....	\$ 5,431.92	\$ 4,685.18
<i>Lake Mattamuskeet:</i>		
Salaries and Wages.....	\$ 2,535.00	\$ 3,990.00
Supplies and Materials.....	47.70	62.51
Postage, Telephone, and Telegraph.....	-----	96.20
Motor Vehicle Operation.....	571.86	598.16
Equipment.....	141.38	-----
Rents.....	-----	80.00
TOTAL.....	\$ 3,295.94	\$ 4,826.87
<i>Burke County Land:</i>		
Purchase of Land.....	\$ .....\$	\$ 5,100.00
General Expense.....	-----	239.25
TOTAL.....	\$ .....\$	\$ 5,339.25
<i>Miscellaneous Accounts:</i>		
Contribution Retirement System.....	-----	1,319.07
TOTAL DISBURSEMENTS.....	\$ 69,297.96	\$ 92,834.60



DIVISION OF GAME AND INLAND FISHERIES—*Continued*

	1940-41	1941-42
<b>VII. INLAND FISHERIES—<i>Continued</i>:</b>		
Less Receipts:		
Sale of Angler's Licenses.....	\$ 74,915.01	\$ 78,712.56
Transferred from Preceding Year.....	34,311.31	39,928.36
Sale Mackey's Creek Land.....		5,000.00
<b>TOTAL RECEIPTS.....</b>	<b>\$ 109,226.32</b>	<b>\$ 123,640.92</b>
<b>BALANCE FORWARD, INLAND FISHERIES.....</b>	<b>\$ 39,928.36</b>	<b>\$ 30,806.32</b>
<b>VIII. GAME:</b>		
<i>Administration and Enforcement:</i>		
Salary, Commissioner.....	\$ 4,800.00	\$ 4,800.00
Salaries, Staff.....	139,343.99	133,909.37
Supplies and Materials.....	764.99	724.67
Postage, Telephone, Telegraph, and Express.....	3,882.64	2,891.65
Travel Expense.....	17,775.00	17,633.14
Printing and Binding.....	4,355.67	2,731.08
Motor Vehicle Operation.....	5,145.03	2,696.12
Repairs and Alterations.....	96.29	54.23
General Expense.....	1,673.19	256.08
Typing Records.....	103.78	
Legal Costs.....	57.46	81.93
Subscriptions and Dues.....	48.00	69.90
Insurance and Bonding.....	1,613.88	1,604.82
Equipment.....	462.58	22.58
Motor Vehicle Exchange.....	144.25	
<b>TOTAL.....</b>	<b>\$ 180,266.75</b>	<b>\$ 167,475.57</b>
<i>Game Farms and Refuges:</i>		
<i>Game Farm—Fayetteville:</i>		
Salaries and Wages.....	\$ 4,458.05	\$ 3,764.80
Supplies and Materials.....	2,602.08	2,485.39
Postage, Telephone, and Telegraph.....		20.67
Travel Expense.....	43.10	51.00
Motor Vehicle Operation.....	636.94	400.97
Lights and Power.....	278.99	656.39
Repairs and Alterations.....	418.96	134.97
Equipment.....	51.36	11.01
Buildings and Improvements.....	32.00	
Motor Vehicle Exchange.....		530.00
<b>TOTAL.....</b>	<b>\$ 8,521.48</b>	<b>\$ 8,055.20</b>
<i>Game Farm—Pine Forest:</i>		
Salaries and Wages.....	\$ 5,232.24	\$ 4,443.88
Supplies and Materials.....	2,440.39	2,084.26
Postage, Telephone, and Telegraph.....	64.87	23.69
Travel Expense.....	25.69	17.83
Motor Vehicle Operation.....	325.71	329.40
Lights and Power.....	234.36	266.23
Repairs and Alterations.....	464.26	87.74

## DIVISION OF GAME AND INLAND FISHERIES—Continued

	1940-41	1941-42
VIII. GAME—Continued:		
Game Farms and Refuges—Continued:		
Game Farm—Pine Forest—Continued:		
Equipment.....	\$ 238.24	\$ 28.58
Buildings and Improvements.....	244.05	-----
TOTAL.....	\$ 9,269.81	\$ 7,281.61
Game Farm—Mt. Mitchell:		
Salaries and Wages.....	\$ 1,135.00	\$ 255.83
Supplies and Materials.....	381.95	943.14
Motor Vehicle Operation.....	82.28	36.01
Repairs and Alterations.....	712.25	281.84
Buildings and Improvements.....	33.88	-----
TOTAL.....	\$ 2,345.36	\$ 1,516.82
Western Refuges:		
Salaries and Wages.....	\$ 14,648.50	\$ 16,360.00
Supplies and Materials.....	120.34	42.66
Postage, Telephone, and Telegraph.....	58.70	152.03
Travel Expense.....	252.40	210.01
Printing and Binding.....	138.20	44.20
Motor Vehicle Operation.....	1,889.91	1,105.99
Rents.....	205.00	58.33
Equipment.....	8.44	-----
TOTAL.....	\$ 17,321.49	\$ 17,973.22
Farm Game Program:		
Salaries and Wages.....	\$ 17,604.80	\$ 17,050.60
Supplies and Materials.....	420.55	237.26
Postage, Telephone, and Telegraph.....	312.21	914.59
Travel Expense.....	2,665.48	2,293.58
Printing and Binding.....	2,322.37	1,996.42
Motor Vehicle Operation.....	2,884.43	2,901.80
Repairs and Alterations.....	20.50	1.25
Rents.....	4.00	-----
Equipment.....	521.87	27.53
Motor Vehicle Exchange.....	818.50	933.86
TOTAL.....	\$ 27,574.71	\$ 26,356.89
Pittman-Roberson Projects:		
Holly Shelter Project:		
Salaries and Wages.....	\$ 13,115.87	\$ 9,662.10
Supplies and Materials.....	278.90	316.06
Postage, Telephone, and Telegraph.....	95.75	66.25
Travel Expense.....	345.01	27.07
Motor Vehicle Operation.....	5,402.00	5,276.70
Printing and Binding.....	70.63	-----
Lights and Power.....	13.00	-----
Repairs and Alterations.....	14.68	-----
General Expense.....	147.17	-----
Equipment.....	531.45	-----



DIVISION OF GAME AND INLAND FISHERIES — *Continued*

	1940-41	1941-42
<b>VIII. GAME—Continued:</b>		
<i>Pittman-Roberson Projects—Continued:</i>		
<i>Holly Shelter Project—Continued:</i>		
Additions and Betterments.....	\$ 1,146.48	\$ .....
Motor Vehicle Exchange.....	2,678.85	.....
TOTAL.....	\$ 23,839.79	\$ 15,348.18
<i>Wildlife Research Project:</i>		
Salaries and Wages.....	\$ 7,901.93	\$ 6,360.09
Supplies and Materials.....	883.15	725.06
Postage, Telephone, Telegraph, and Express.....	.....	10.05
Travel Expense.....	1,538.03	779.85
Printing and Binding.....	10.15	.....
Motor Vehicle Operation.....	1,121.98	931.89
General Expense.....	734.73	.....
Rents.....	.....	54.80
Equipment.....	698.64	107.46
TOTAL.....	\$ 12,888.61	\$ 8,969.20
<i>Fur Resources Investigation:</i>		
Salaries and Wages.....	\$ 2,545.60	\$ 2,897.20
Supplies and Materials.....	748.09	303.70
Postage, Telephone, and Telegraph.....	66.08	43.50
Travel Expense.....	327.85	208.46
Motor Vehicle Operation.....	637.11	646.49
Repairs and Alterations.....	49.60	.....
General Expense.....	325.35	.....
Rents.....	.....	100.00
Equipment.....	652.53	364.30
TOTAL.....	\$ 5,352.21	\$ 4,563.65
<i>Deer Research Project:</i>		
Salaries and Wages.....	\$ 2,515.00	\$ 2,891.90
Supplies and Materials.....	179.46	591.03
Postage, Telephone, and Telegraph.....	23.27	13.45
Travel Expense.....	526.48	142.81
Printing and Binding.....	.....	2.49
Motor Vehicle Operation.....	378.20	578.59
General Expense.....	8.34	.....
Equipment.....	276.56	73.60
Motor Vehicle Exchange.....	804.25	.....
TOTAL.....	\$ 4,711.56	\$ 4,293.87
<i>Holly Shelter Land—Acquisition Project:</i>		
Salaries and Wages.....	\$ 664.00	\$ .....
Motor Vehicle Operation.....	77.44	.....
Field Travel.....	27.55	.....
Legal Costs.....	625.12	.....
Purchase of Land.....	3,000.00	4,641.00
TOTAL.....	\$ 4,394.11	\$ 4,641.00

## DIVISION OF GAME AND INLAND FISHERIES—Continued

	1940-41	1941-42
VIII. GAME—Continued:		
Pittman-Roberson Projects—Continued:		
Water Impoundment Program:		
Salaries and Wages.....	\$ 2,253.45	
Supplies and Materials.....	69.36	
Postage, Telephone, and Telegraph.....	29.45	
Travel Expense.....	9.50	
Motor Vehicle Operation.....	3,984.97	
Motor Vehicle Exchange.....	630.00	
TOTAL.....	\$ 6,960.86*	\$ 6,976.73
Coordinating Project:		
Salaries and Wages.....	\$ 4,670.00	
Supplies and Materials.....	95.33	
Postage, Telephone, and Telegraph.....	42.04	
Travel Expense.....	337.55	
Motor Vehicle Operation.....	592.22	
Equipment.....	95.94	
TOTAL.....	\$ 5,833.08	
TOTAL PITTMAN-ROBERTSON PROJECTS.....	\$ 58,147.14	\$ 50,625.71
Sandhills Refuge:		
Salaries and Wages.....	\$ 150.00	\$ 361.53
Supplies and Materials.....	59.10	56.50
Lights and Power.....	37.63	92.44
Repairs and Alterations.....	671.17	200.52
Equipment.....	513.00	15.00
TOTAL.....	\$ 1,430.90	\$ 725.99
Holly Shelter Refuge:		
Salaries and Wages.....	\$ 326.25	
Supplies and Materials.....	43.00	
Equipment.....	259.98	
TOTAL.....	\$ 629.23	
Miscellaneous Accounts:		
Equipment River Patrol.....	\$ 458.93	\$ 193.50
Motor Boats Operation.....	1,273.68	1,176.83
Workmen's Compensation.....	517.30	1,149.62
Coöperation Forest Fire Control.....	2,067.87	
Donation Forest Fire Control.....	8,750.00	
Contribution Retirement System.....		4,304.88
TOTAL.....	\$ 13,067.78	\$ 6,824.83
TOTAL DISBURSEMENTS.....	\$ 317,945.42	\$ 287,465.07

\*One account.



DIVISION OF GAME AND INLAND FISHERIES — *Continued*

	1940-41	1941-42
VIII. GAME— <i>Continued</i> :		
Less Receipts:		
Sale of Hunting Licenses.....	\$ 263,478.01	\$ 300,410.60
Transferred from Preceding Year.....	12,642.02	3,026.24
Coöperation Federal Government.....	42,835.81	36,910.93
Receipts, Sandhills Refuge.....	2,015.82	3,674.44
Receipts, Holly Shelter Refuge.....	-----	2,770.00
Sale Stokes County Land.....	-----	1,500.00
TOTAL RECEIPTS.....	\$ 320,971.66	\$ 348,292.21
BALANCE FORWARD ,GAME DIVISION.....	\$ 3,026.24	\$ 60,827.14
TOTAL DISBURSEMENTS.....	387,243.38	380,299.67
LESS TOTAL RECEIPTS.....	430,197.98	471,933.13
TOTAL BALANCE FORWARD.....	\$ 42,954.60	\$ 91,633.46

# DIVISION OF COMMERCIAL FISHERIES

## INTRODUCTION

Those in control of commercial fishing are mindful of their responsibilities to the industry and to the public during this emergency even as they were in peace time. It is realized that the bars raised so slowly during the past years against wasteful practices must not be lowered even though fish may, as it has already in a number of countries at war, become increasingly important as a meat diet for the people. Manifestly, military necessity will place certain restrictions on this activity; even so, the program of conservation and development must be carried out as wisely and as unpromisingly as it has been in other times and under different circumstances.

## FOOD FISH

The war has been on only seven of the twenty-four months in this biennium yet it has affected the industry to a marked degree. Many of our fishermen have entered the service of their Government, some in the Coast Guard, others in the Navy, and large numbers in defense work. Although this phase of the industry has more men engaged in it than any other, the large numbers that have left it are bound to make their absence felt in different ways. Quite a number of those who entered the Coast Guard Reserve took their boats with them and made up their crews from among the fishermen. This will necessarily affect collections and the catch of fish. Too, certain restrictions imposed by the Government in the way of barring fishing in waters covering some of the best fishing grounds, and limiting the fishing to specified hours have, no doubt, had harmful effects. However, the Captain of the Port, Lieut. N. H. Church, whose headquarters are at Morehead City, has shown a fine spirit of coöperation with the fishermen and has done everything he could to help them. During this period the State produced \$6,182,000 pounds of food fish at a value of \$3,405,000. The fish consumed by fishermen and their families is unknown and, therefore, not given. This is also the case with all statistics given for shellfish. The table of statistics at the end of this story gives the catch of different varieties of food fish during this period.

## SHRIMP

Three winters ago the weather was extremely cold and, as a consequence, the shrimp were killed out. The yield this period showed a marked falling off from that of the previous biennium and only around Southport were there any encouraging signs of any decided pick up in production. The catch of shrimp for the past two years was 2,488,295 pounds headed or 4,147,158 pounds in the rough, and sold for \$174,180.

## MENHADEN

This activity is entirely different from all the others in the industry. The operators of the factories or plants nearly always own their boats and equipment and pay the men an agreed price for their catch. Ordinarily the food fishermen own their rigs and sell their catch in open market. The labor



in the plants receive wages during the active season; and therefore, the operators have all the risk and responsibility and their investment is tremendous compared with that of any other activity in the industry. The ten menhaden plants in the State, eight in Carteret County and two in Brunswick County, represent an investment of some \$800,000, the boats \$500,000, and nets \$85,000. The crews on these boats range from fifteen to twenty men and there are forty-two of these boats. The price received for the oil and scrap made from menhaden was better the second year of this biennium than for the first year, and at the time of this writing the price has increased considerably. In fact, the prices are better than they have been since World War I. During this biennium 466,788,000 menhaden were caught, 2,675,000 gallons of oil and 32,690 tons of scrap were manufactured. Twenty-two boats out of Virginia fished north of Hatteras, and the statistics above do not include their catch because the fish were carried to the home plants.

### OYSTERS

The production of oysters from public grounds during the second half of this period was almost double that for the first half. The output for the biennium was 420,300 bushels which sold for \$168,120. Our Board has always advocated private cultivation of oysters and has done everything possible to encourage it. The General Assembly of 1941 appropriated \$10,000 at the request of the Department, for an oyster experimental farm which has been located five miles out of Beaufort on North River. A watch house has been built and 80 acres of land for cultivation laid off. Five thousand bushels of oysters have been planted, and are doing well. Since this farm was started, we have had several applications from private citizens to lease from ten to twenty acres of ground each for cultivation.

### CLAMS

This activity has had an important place in the industry as it comes in the summer time when there is little fishing and no oystering. Most anyone can do clamming as there is no expense attached. Some of the clammers catch as high as eight to ten bushels of clams a day and get from \$1.50 to \$2.00 a bushel, according to the size. The State produced 196,636 bushels of clams this biennium, which was an increase of 88,834 bushels over the previous biennium.

### ESCALLOPS

Escaloping has not regained the place it formerly held previous to the killing out of the eel grass, and it will probably never come back until the grass sets again in the scallop grounds. A total of 5,637 gallons of escallops was produced this period as against 3,185 gallons the previous biennium.

### CRABS

Soft crabbing is an important activity in Carteret County and a lot of money is made out of it by the fishermen during the months of April and May. During this biennium, 115,842 dozen soft shell crabs have been marketed as against 115,709 dozen for the previous biennium. The hard crab is more important than the soft crab for the reason that it takes in so

many other counties: Onslow, Carteret, Craven, Pamlico, Beaufort, Hyde, Dare and Currituck. There is a crab meat plant at Oriental and one at Belhaven, and in addition to these, trucks run here from Virginia and Maryland and take the crabs out in the rough. We marketed during this period 9,000,000 pounds at a value of \$180,000.

## REPORT OF DISTRICT SANITARY ENGINEER

CAPTAIN JOHN A. NELSON,  
*Fisheries Commissioner*  
Morehead City, N. C.

Dear Captain Nelson:

The following report is a very brief summary of the activity of the office of Shellfish Sanitation during the biennium ending June 30, 1942.

Due to the regular monthly inspection of all shucking houses and bi-monthly inspection of all shellstock plants considerable improvement has been noted. The method of grading these plants has become definitely established and through its influence the physical equipment of the plants has been greatly improved as well as the methods used in the handling of shellfish. Several new shucking houses have been constructed and the older plants have been reconditioned in accordance with the regulation of the U. S. Public Health Service.

Through inspection and constant laboratory control work the shellfish industry has been able to meet the requirements of the U. S. Public Health Service for inter-State shipping at all times. During this period an average of thirty shucking houses and eighty-five shellstock plants have operated and handled 420,300 bushels of oysters (not including oysters from private beds) and 196,636 bushels of clams.

In addition to the oyster and clam work this office has maintained close supervision over the crab meat packing industry. In coöperation with the U. S. Food and Drug Administration regular bacteriological and sanitary surveys have been conducted in connection with the ten crab meat plants that have operated in North Carolina, handling 9,000,000 pounds of hard crabs and 115,842 dozens of soft crabs during the biennium. In connection with the laboratory control work it is interesting to note that no crab meat from North Carolina has been condemned during this period. In view of this fact, it is believed that our crab meat plants as well as oyster and clam plants compare favorably with any on the Atlantic Coast.

This office maintains constant supervision over the patrolling of restricted areas in this State, preventing shipment of shellfish taken from contaminated and otherwise undesirable areas. Due to this strict supervision many violators were apprehended and convicted. The result of this work is reflected in the fact that no shipments of shellfish from this State were condemned in other State Markets.

In closing I would like to express my appreciation to you and your staff for the close coöperation and assistance given me in performing my duties.

Respectfully submitted,

E. L. DUDLEY, *District Sanitary Engineer*,  
N. C. State Board of Health.



### DIAMOND-BACK TERRAPIN

No one has paid much attention to the diamond-back terrapin for the past ten years. While the supply is large, there are very few caught because there is practically no demand for them. The U. S. Laboratory on Piver's Island, N. C., liberated 12,500 young terrapin in our waters during this period, which is evidence that there is hope a demand for this delicious shellfish will somehow be created.

### MUSSELS

This is a new industry in the State. A mussel plant here is operated by J. C. Walker Brothers, Exmore, Virginia. While the plant is located in Morehead City, the operators are branching out in Onslow and Pender counties to secure their supply of mussels and still they are not getting enough to meet the demand. The fishermen make \$4 to \$8 per day catching the mussels and the shuckers earn from \$2 to \$4 per day. The plant employs about 100 shuckers.

### PATROL BOATS

Since the last biennial report, the *Hatteras* and *John A. Nelson* have been turned over to the Coast Guard, and we are operating with the *Croatan*, *Albemarle*, *Ocracoke*, *Neuse*, *Pungo*, and *Roanoke*. The *Albemarle* is stationed at Edenton, the *Croatan* at Manteo, *Ocracoke* at Belhaven, the *Neuse* at New Bern, and the *Pungo*, and *Roanoke*, our two small boats, are stationed at Morehead City.

# KIND, QUANTITY AND VALUE OF FISH TAKEN IN WATERS OF NORTH CAROLINA

For the Period July 1, 1940 to June 30, 1942

Kind of Fish	No. of Pounds	Value
Spotted Trout.....	2,000,000	\$ 240,000
Gray Trout.....	12,000,000	480,000
Sea Mullet.....	950,000	28,500
Blue Fish.....	1,000,000	60,000
Mullet.....	5,250,000	315,000
Croakers.....	10,000,000	300,000
Spots.....	10,000,000	300,000
Hogfish.....	600,000	18,000
Mackerel.....	600,000	60,000
Shad.....	2,800,000	700,000
Herring.....	35,000,000	525,000
Butters.....	900,000	36,000
Carp.....	250,000	15,000
Rock or Striped Bass.....	600,000	90,000
Flounders.....	2,000,000	120,000
Puppy Drum.....	500,000	20,000
White Perch.....	750,000	45,000
Cats.....	500,000	30,000
Eels.....	40,000	2,400
Jack.....	300,000	15,000
Pike.....	22,000	1,100
Pompano.....	10,000	1,000
Channel Bass.....	100,000	2,000
Sheephead.....	10,000	1,000
<b>TOTAL FOOD FISH.....</b>	<b>86,182,000</b>	<b>\$ 3,405,000</b>
Shrimp.....	4,147,158	174,180
Menhaden (No. of Fish).....	466,788,000	2,333,940
<b>TOTAL VALUE OF FIN FISH.....</b>		<b>\$ 5,913,520</b>

## SHELLFISH

Oysters.....	420,300 (bushels).....	\$ 168,120
Clams.....	196,636 (bushels).....	294,954
Escallops.....	5,637 (gallons).....	11,274
Soft Shell Crabs.....	115,842 (dozens).....	115,842
Hard Crabs.....	9,000,000 (pounds).....	180,000
Diamond-Back Terrapin.....	2,000 (pounds).....	400
<b>TOTAL VALUE OF SHELLFISH.....</b>		<b>\$ 770,590</b>

## TOTALS

Value of Fin Fish.....	\$ 5,913,520
Value of Shellfish.....	770,590
<b>TOTAL VALUE OF WATER PRODUCTS.....</b>	<b>\$ 6,684,110</b>



STATEMENT OF RECEIPTS AND DISBURSEMENTS OF THE  
DIVISION OF COMMERCIAL FISHERIES, DEPARTMENT  
OF CONSERVATION AND DEVELOPMENT  
For Biennium 1940-1942

	1940-41	1941-42
<b>ADMINISTRATION AND INSPECTION:</b>		
Commissioner's Salary.....	\$ 4,125.00	\$ 4,200.00
Salaries and Wages.....	14,904.24	14,283.30
Supplies.....	57.20	199.25
Postage, Telephone, and Telegraph.....	431.61	529.25
Travel Expense.....	318.85	265.28
Printing and Binding.....	313.84	359.89
Motor Vehicle Operation.....	3,157.70	3,224.10
Office Rent.....	1,000.00	1,000.00
Insurance and Bonding.....	95.00	90.00
Equipment.....		100.00
Other Sources.....		40.00
<b>TOTAL</b> .....	<b>\$ 24,403.44</b>	<b>\$ 24,291.07</b>
<b>OPERATION PATROL BOATS:</b>		
Salaries and Wages.....	\$ 10,600.98	\$ 10,838.50
Supplies.....	2,664.37	4,747.22
Gas and Oils.....	2,761.20	2,598.63
Repairs.....	5,983.34	5,765.62
Equipment.....	922.00	356.01
Subsistence.....	2,665.55	2,498.35
Docks and Warehouses.....	457.05	112.00
Marking Fishing Limits.....	130.54	281.25
Fire Insurance—Patrol Boats.....	236.25	236.25
<b>TOTAL</b> .....	<b>\$ 26,420.28</b>	<b>\$ 27,433.83</b>
<b>SHELLFISH SANITATION:</b>		
Supplies and Materials.....	\$ 75.57	\$ 44.30
Equipment.....		82.06
<b>TOTAL</b> .....	<b>\$ 75.57</b>	<b>\$ 126.36</b>
<b>PERMANENT IMPROVEMENT:</b>		
Two Engines for Hatteras.....		\$ 13,906.00
<b>TOTAL EXPENDITURES</b> .....	<b>\$ 50,899.29</b>	<b>\$ 65,757.26</b>
<b>LESS RECEIPTS</b> .....	<b>20,429.03</b>	<b>33,042.09</b>
<b>APPROPRIATION</b> .....	<b>\$ 20,470.26</b>	<b>\$ 32,715.17</b>
<b>RECEIPTS:</b>		
Food Fish Licenses and Taxes.....	\$ 7,446.10	\$ 5,314.84
Oyster Licenses and Taxes.....	3,373.89	4,865.08
Escallop Licenses and Taxes.....	264.35	35.00
Clam Licenses and Taxes.....	2,693.57	5,326.85
Crab Licenses and Taxes.....	2,747.72	3,382.64
Menhaden Licenses.....	12,293.50	11,944.75
Power Boat Licenses.....	261.25	213.25
Other Sources.....	1,348.65	1,959.68
<b>TOTAL</b> .....	<b>\$ 30,429.03</b>	<b>\$ 33,042.09</b>

## DIVISION OF COMMERCE AND INDUSTRY

In spite of the war in Europe and Asia and our participation in lend-lease efforts to supply those nations materials, we were not well prepared in this country for the full impact of war upon our economic and industrial life. The failure to understand fully the demands of waging global warfare, has not been the particular failure of any one group, but seems to have extended through all our national life. Added to this mental hazard has been the interminable difficulties associated with the very mechanics involved in the operation of our vast war-time program.

One of the earliest conclusions was the suggestion that this all-out war would require the maximum production of all our industrial plants and machines. In recent months our thinking has been somewhat revised because of material shortages and stepped-up production and delivery schedules on goods contracted for. It is known now that our maximum effort in many categories of required items must be geared almost entirely to the available supplies of raw materials.

Materials, basically, have been responsible for a large portion of plant conversions, and have most certainly restricted new plant construction, forcing the utilization of available idle space and machines. Of course, the time element and the need for accelerated production have also greatly influenced the industrial picture.

Needless to say, under the abnormal conditions which have prevailed since the beginning of our active interest and participation in the war, great and far-reaching changes have affected our industrial system. These changes, in turn, have considerably modified normal procedures for industrial promotion and development. At the time of this report, three of the main attractions for industrial development—restricted altogether now to plants to produce for the war effort—are availability of labor, manufacturing space, and electric power. The presence in the State of certain critical materials has resulted in great activity in several basic industries, especially mining and lumbering. To the present, however, neither development has affected to any great extent process manufacture, as the lumber has been used largely for construction purposes and our minerals have been shipped elsewhere for processing.

Aside from new plant locations and facility expansions, the war has made itself felt both favorably and unfavorably upon industrial activity in the State. Class consumer items in all industrial categories have had to give way, or are slowly being restricted, where conversion has not been possible to date. In the textile industry, yarn and goods mills have been operating at full capacity. Cotton hose manufacturers have been active, but the full-fashioned industry has suffered serious curtailment due to lack of silk and nylon, their inability to convert to war work, and the slow progress made on new fine cotton and rayon yarns for the industry. The tobacco industry to date has not faced any great difficulties and none appear immediately ahead. The furniture industry for the present is operating satisfactorily, but faces acute troubles unless additional war contracts are available to take up almost certain slacks which may occur because of priority controls over strategic materials and restricted consumer purchases to combat inflation. Metal working plants, including machine shops, have been adversely affected as a



whole. A number of the larger, well-equipped shops have been greatly expanded and are on full-time war production; however, most of the smaller operators have no war work and are closely restricted by priority controls.

Despite extensive curtailments in some fields of manufacture during the past two years, it is almost certain that North Carolina's census of manufactures for this period will show increased employment, wages paid, and value of manufactured products for the past biennium.

From the standpoint of new industrial construction, it appears the State is holding its own—at least in capital investment. Total contracts awarded for industrial construction in 1940 amounted to \$8,500,000; \$19,000,000 in 1941; and for the first seven months of 1942, a total new investment of \$14,000,000 in industrial construction.

Of major importance to our economic and industrial life in North Carolina has been the award of major war supply and facility contracts from June 1940 through June 1942, of allocations amounting to \$543,304,000.

The following is a fairly close approximate of new plants and plant additions, by industrial classification, in North Carolina during the past two years. The number of new industries slightly exceeds that of the last biennium (239), while plant expansions run considerably below 1938-40. Especially noteworthy is the exceptionally large number (115) additions made to established textile plants.

NEW PLANTS		ADDITIONS	
Textiles: .....	75	Textiles .....	115
Cotton .....	8	Cotton .....	39
Hosiery .....	46	Hosiery .....	46
Knit Goods .....	2	Knit Goods.....	0
Silk and Rayon.....	5	Silk and Rayon.....	12
Dyeing and Finishing.....	1	Dyeing and Finishing.....	9
Miscellaneous Textiles.....	13	Miscellaneous Textiles.....	9
Food and Kindred Products.....	50	Food and Kindred Products.....	20
Clay, Glass, Stone.....	8	Clay, Glass, Stone.....	1
Chemicals .....	3	Chemicals .....	3
Furniture .....	54	Furniture .....	1
Lumber .....	1	Leather Goods .....	0
Paper and Printing.....	4	Lumber .....	0
Tobacco Manufacture.....	0	Paper and Printing.....	4
Woodworking .....	1	Tobacco Manufacture.....	0
Machinery and Parts.....	3	Woodworking .....	0
Miscellaneous Industries.....	33	Machinery and Parts.....	9
Non-Manufacturing .....	11	Miscellaneous Industries.....	6
.....	—	Non-Manufacturing .....	25
TOTAL NEW INDUSTRIES.....	244	TOTAL ADDITIONS.....	184

With the establishment of the War Production Board and its Contract Distribution Branch in this State, the Division of Commerce and Industry closed its Washington Office established by Governor Clyde R. Hoey. During the operation of this office in Washington initial contacts were made and contract procedures clarified for a number of North Carolina manufacturers.

The mobilization of industrial facilities for war in December 1941, led the Division at that time to the conclusion that new industrial locations would be reduced to a minimum, and that the services of the majority of the personnel might be better utilized elsewhere. Extended leaves of absence were granted to J. T. Anderson, Chief Industrial Engineer, and to Cecil E. Bell, Assistant Engineer, to serve as director and assistant director of the Contract Distribution Branch of the WPB in North Carolina. Neither engineer ever left the full employ of the State, as Mr. Anderson was accidentally killed in an automobile accident as he took up his WPB duties, and Mr. Bell returned to the Division.

Contrary to the first conclusion that industrial location work would be reduced, there began in March of 1942 one of the greatest periods of activity the Division has ever known. This activity has continued, and is expected to continue on through the fall of 1942. The factors—available labor, manufacturing space, and power, along with specific advertisements covering these items and certain strategic mineral resources—are held chiefly responsible for this great spurt of activity.

It is unfortunate that this period of activity came at a time when the Division was extremely handicapped from the standpoint of personnel. This condition will be partially relieved shortly after the close of the fiscal year with the employment of a part-time assistant engineer.

Just prior to the close of the last fiscal year steps were taken to render concrete assistance to North Carolina manufacturers in their efforts to convert to war production and to obtain war contracts. A board to coördinate war industries was set up by Governor J. M. Broughton. James E. Coad was employed as secretary to this board and assigned the task of helping manufacturers to obtain new business. This office is a part of the Division of Commerce and Industry and is being financed from its funds. The two branches are collaborating in their industrial development and contract distribution activities.

Members of the Committee on War Industrial Coördination are:

J. Ed Millis, Adams-Millis Hosiery Co., High Point, Chairman.  
 Russell F. Hall, Wysong & Miles Machine Shop, Greensboro, Vice Chairman.  
 T. Henry Wilson, Drexel Furniture Company, Drexel.  
 John K. Barrow, Zebulon Lumber & Mill Co., Zebulon.  
 George Bernhardt, Bernhardt Furniture Co., Lenoir.  
 Frank Daniels, *The News and Observer*, Raleigh.  
 J. Wesley Jones, Statesville Flour and Milling Co., Statesville.  
 Charles A. Cannon, Cannon Towel Co., Kannapolis.  
 P. H. Hanes, P. H. Hanes Knitting Co., Winston-Salem.  
 Col. Robert Baker, Blue Bell-Glove Manufacturing Co., Greensboro.  
 William D. Carmichael, University of North Carolina, Chapel Hill.  
 T. J. Hackney, Hackney Wagon Works, Wilson.  
 Harry Straus, Ecusta Paper Co., Brevard.  
 J. T. Hier, Wilmington.  
 Dr. Ben F. Royal, Morehead City.  
 J. Vivian Whitfield, Farm Bureau, Wallace.  
 Sen. L. Y. Ballentine, Varina.  
 Josh L. Horne, Jr., *The Evening Telegram*, Rocky Mount.  
 Walter J. Damtoft, Champion Fiber Co., Canton.



*Ex Officio*

Governor J. Melville Broughton, Raleigh.

Irving F. Hall, President, State Capital Life Insurance Co., Raleigh.

R. Bruce Etheridge, Director, N. C. Department of Conservation and Development.

James E. Coad, Secretary.

Until the great amount of field work now demanded subsides somewhat, and until the national industrial picture becomes more clearly defined, it will not be possible to formulate plans for post-war activities. The fact must be recognized, however, that war-time developments to date do definitely indicate some considerable promise for an acceleration of one of the Division's main industrial development objectives, namely, the further diversification of manufacture in North Carolina. In this connection, it appears likely that the State may reasonably expect some new and interesting developments in the minerals and chemical industries.

## DIVISION OF FORESTRY

The Biennium of 1940-42 has seen more big changes in Forestry Administration than any period since 1932-34. The defense effort developing into what is now a "Global War" has necessarily affected all activities of government since all efforts must be directed toward the protection of our country, which means the defeat of our enemies. The size and efficiency of the Civilian Conservation Corps rapidly declined until in May '42 when our last camp was taken over by the Army, leaving us without labor to complete authorized projects or authority to take over and use equipment purchased by that organization for such projects. The devastating spring fire season of 1942 and the demand for more adequate fire control in the counties containing or adjacent to war activities has necessitated special emphasis on this branch of the work and has justified the acceptance of special Federal allotments for this purpose.

The greatly increased demand for timber for defense and other purposes has naturally stimulated cutting and the demand for advice on better methods of handling woodlands greatly increased. Unfortunately no additional funds have been available for this work and this fine opportunity for aiding the war effort and at the same time insuring continuing timber crops for future needs has remained largely in the hands of only one man. Additional men who can help woodland owners in the economical cutting and marketing of their timber would seem to be a war time necessity.

The production of forest tree seedlings, which with the acquisition of some additional property and the aid of the Civilian Conservation Corps promised fairly adequate increase, will now be considerably reduced as shortage of farm labor will no doubt limit demand.

The State Park work which has been carried forward on a permanent basis and has secured the strong support of the people of the State, will necessarily receive greatly reduced patronage. Emphasis will therefore now be placed on the necessary acquisition of land without which it will be impossible to complete the present program.

*Personnel.* Due to the War there has been more than the usual number of changes in personnel. As Reserve Officer, Capt. F. H. Claridge, Assistant State Forester, served his year's period of training at Fort Bragg, November 10, 1940, to October 30, 1941. Following our entry into the War he was again called and left March 7, 1942, for the duration. Phillip A. Griffiths, in charge of the Crab Creek Nursery, assisted the State Forester as he could be spared from his other duties during Claridge's first absence, but after March 1 he was transferred to the Raleigh office as Associate Forester in charge of Forest Management.

Late in the fall of 1941, William L. Beasley, Jr., of Louisburg, N. C., a graduate of the State College and Duke Forestry Schools, and for the previous two years, Secretary of the North Carolina Forestry Association, was selected for the position of Associate Forester in the State Forester's Office, and he entered into his duties December 1. After a busy and profitable three months he was inducted into the new army, leaving March 1, 1942.

On December 1 the State Forester was allowed semi-retirement on the basis of working only half time, but on March 1, when both Claridge and



Beasley left for the duration of the war, his full-time status was restored.

Miss Susan Marshall, of Raleigh, who had served as Secretary to the State Forester for the previous seven years, resigned, effective July 15, 1941, and on August 1, 1942, Mrs. Edna J. Almand, of Gastonia, was appointed to fill the position. On June 13, 1942, L. H. Hobbs, who had been in charge of the Bladen Lakes State Forest since October 1939, resigned to go into private work. His place was immediately filled by the appointment of Frank J. Miller, a graduate in forestry of N. C. State College, who had worked for a number of years in the Central States with the U. S. Forest Service. From April to September 1941, Bill L. Cook, a Junior in State College Forestry School, was employed to assist Hobbs on the Bladen Lakes State Forest and carry some other brief assignments.

The resignation of Wm. C. McCormick became effective March 1, 1942. With the exception of a six-year interim (June 1928 to May 15, 1934), he had been Assistant State Forester in charge of Fire Control since January 1, 1926, an aggregate of somewhat over ten years. This position was filled by the immediate promotion of Wm. K. Beichler, who took up work with this Department July 1927, as District Forester, and for the past six years has been Chief Inspector in the Fire Control branch. At the same time, J. R. Spratt, District Forester at Lenoir for the past seven years, was made Chief Inspector. By taking advantage of the experience of these two men, the work of this most important part of the Division of Forestry has continued without interruption.

The Branch of State Parks has also suffered rather severe loss of trained personnel on account of the war. Capt. Charlie C. Stott, who as Assistant Superintendent of State Parks, effectively and efficiently assisted in carrying on the work of the Branch of State Parks since June 3, 1939, was called to active duty with the United States Army on March 13, 1941, and is now on military leave. Four days later Earl B. Ruth was employed to fill this position, but he resigned on September 30, 1941, and is now on active duty as an officer in the United States Naval Reserve. To fill this vacancy L. L. Miller was employed on January 1, 1942, as Assistant Superintendent of State Parks. Louis A. Oliver, who for a number of years, as a CCC employee, has assisted in the development of our State Parks and who became a member of this Department as State Park Architect September 18, 1941, resigned on April 22, 1942, to enter duty with the United States Army Engineers in a civilian capacity. Miss Elizabeth Yancey, who had been Secretary to the Superintendent of State Parks since December 13, 1937, resigned on April 24, 1942 to accept employment at Camp Butner. In addition to these permanent employees of the Branch of State Parks, a number of temporary employees experienced in park operation and maintenance have been called to active military duty.

### FOREST FIRE CONTROL

During the two year period covered by this report the forest area under protection by the State Forest Service changed very little. Those changes made were due to a slight difference in the number of counties under protection and to expanding Federal ownership, which was principally in the form of military or naval reservations. Financial cooperation in fire control was continued with the Federal government under Section 2 of the Clarke-McNary

Law, whereby Federal funds are allotted to the several states for fire prevention based upon appropriations made available within the states themselves. It will be noted in the Progress Chart that the Federal appropriation as of June 1941, was considerably less than as of the preceding year. This was due entirely to the fact that increased appropriations within the State, and particularly by the State government, failed to keep pace with such increases on the part of the majority of other states. Accordingly, the Federal allotment to North Carolina suffered a reduction. The allotment as of June 1942, however, had again been considerably increased, due entirely to the fact that the over-all Federal appropriation for the entire country had been increased. It will be noted from the Progress Chart that our slightly increased funds have again been devoted toward giving better protection to counties already cooperating, rather than to extending the protected area. Inasmuch as a large part of the area needing State protection was afforded some measure of protection at the beginning of the period it was felt that the best use for added funds would be in bringing the protection up toward the "adequate" figure of 4.6c per acre.

There remain at least fifteen counties in the State whose forest area, forest fire risks, and other considerations place them in great need of organized fire control. This is particularly true, in view of the War and National Defense situation, in some eight or ten counties on or close to the coast. In the late Spring of 1942, steps were under way in cooperation with the Federal government to expand and intensify the State's fire control program in this critical Coastal Defense Area. Actual accomplishments in this program did not begin to take form until just after the close of this Biennium and will, of course, appear in the next report.

The coming of War to this country in December of 1941 represented, of course, a radical change in the picture concerning most public activities. This change was probably much more pronounced in the activity of forest fire control than in many others. The added burdens upon the fire control organization of the State, due to tremendously increased War demands for forest products and to strategic military demands for the abatement of interference of forest fire smoke with such military operations as aerial navigation, combined with increasing shortage of man-power, to call for greatly expanded resources for the fire control organization. Again, the actual accomplishments and full detailing of the problems will appear in the next Biennial report.

*Supervisory Personnel:* As the Progress Chart indicates, the number of District Foresters remained the same throughout the period of this report. The number of District Rangers also remained the same until early in June 1942, when District Ranger Floyd Jones resigned from his position as Acting District Forester in District Three.

The six District Offices as of June 1942, were the same as at the start of the biennium, namely, as follows: District 1, Asheville; District 2, Lenoir; District 3, Rockingham; District 4, New Bern; District 5, Rocky Mount; District 6, Fayetteville. Personnel of these offices will be found under "Department Personnel" near the frontispiece of this Report.

*Present Organization:* As of June 30, 1942, the branch of Forest Fire Control, under supervision of the State Forester, had precisely the same amount of Raleigh Office, District Office, County Warden and Association Ranger personnel as was the case at the end of the preceding biennium. Each of the



## PROGRESS CHART

Fire Control Personnel	As of June 30, 1940	As of June 30, 1941	As of June 30, 1942
Central Office Supervisors.....	2	2	2
District Inspectors.....			1
District Foresters.....	4	4	4
District Rangers.....	7	7	6
County Forest Wardens.....	59	58	59
Protective Association Rangers.....	8	8	8
Counties Coöperating.....	59	58	59
Private Timberland Owners Coöperating.....	49	52	47
Forest Area under State Protection (Acres).....	11,875,667	11,684,211	11,711,983
FINANCES:			
Appropriations by Counties.....	\$ 60,117	\$ 62,543	\$ 68,550
Appropriations by Private Owners.....	10,197	8,784	9,700
Appropriation by State for Fire Control.....	35,045	35,045	58,750
Game Fund Transfer.....	11,250	8,750	
Appropriation by Federal Government.....	69,196	65,447	71,192
TOTAL APPROPRIATIONS.....	\$ 185,805	\$ 180,569	\$ 208,192
Actual Funds Available Per Acre Protected.....	1.49 cents	1.54 cents	1.77 cents

NOTE: Adequate and efficient forest fire protection on a State-wide basis could be given to all of the State's non-Federal forest area (about 17,000,000 acres) at a cost of about 4.6 cents per acre per year. This figure results from a Survey made by the Department in coöperation with all other Southern States and with the United States Forest Service.

fifty-nine State-protected counties had a salaried full-time County Forest Warden; sixteen of these County Wardens were also the County Game Protectors in their respective counties, their salaries being paid jointly by the two divisions of this department. Most of the County Wardens and Association Rangers had been equipped with State-owned  $\frac{1}{2}$ -ton pickup trucks for use in their forest fire control work.

As will be noted in Table C and in the discussion concerning State Forest Service telephone lines the sum total of both of these vital detection improvements operated by the State Forest Service increased appreciably during the biennium.

*County Coöperation:* The Forest Fire Control program of the Department is still being operated principally on the basis of County protection units and financial cooperation by the counties with the Department. Again, as in the preceding Biennial Report, it can be definitely stated that the attitude of the counties toward the work and toward their financial responsibility therein is highly gratifying. The Progress Chart indicates the steady increase in appropriations made available by the counties.

Again, however, it is necessary to report that the Department was unable, due to the limited factor of State Fire Control appropriations, to offer financial cooperation in the work to several counties which made specific inquiry or request for such cooperation. As has been pointed out above, a number of counties which are greatly in need of forest fire control are still without it, due to this inability of the Department to match their proffered cooperative funds.

*Private Coöperation:* The policy of coöperating, in so far as financial resources permit, with individual landowners or groups thereof who desire more nearly adequate forest fire control on their holdings was continued during the biennium. The number of private timberland owners partaking in this cooperative arrangement, and the total area of their forest holdings, varied little during the biennium. Again, limited financial resources of the Department precluded the acceptance of similar cooperative funds from the owners of a very considerable additional area of forest land.

There are appended herewith tables showing the cooperating counties and the Forest Protective Associations for the period of this report (Table A & B).

*Land Use Areas:* The cooperative areas outlined in the preceding biennial report with regard to forest fire control on the two Land Use Areas administered by the Department on lease from the Federal government was continued during the period of this report. The arrangement was somewhat changed, however, in that during the Fiscal Year 1941-42 State Game funds did not share in the financial responsibility for this Land Use Area protection.



TABLE A  
COUNTIES COOPERATING AND ANNUAL SUMS MADE  
AVAILABLE BY THEM

County	1938-1939	1939-1940	1940-1941	1941-1942
Alleghany.....	\$ 750	\$ 750	\$ 750	\$ 750
Anson.....	700	700	700	1,000
Avery.....		750	750	850
Beaufort.....	1,250	1,250	1,250	1,250
Bertie.....	1,500	1,500	1,500	1,500
Bladen.....	1,500	1,500	1,500	1,500
Brunswick.....	2,000	2,000	2,000	2,000
Buncombe.....	1,000	1,250	1,300	1,500
Burke.....	1,500	1,500	1,750	2,000
Caldwell.....	1,000	1,000	1,075	1,250
Chatham.....	700	700	700	1,000
Cherokee.....	1,000	1,000	1,000	1,000
Columbus.....	1,500	1,700	1,700	2,000
Craven.....	1,000	1,250	1,100	1,250
Cumberland.....	825	1,500	1,500	1,250
Dare.....	1,100	1,100	1,200	1,200
Durham.....	800	800	800	800
Duplin.....	1,800	1,800	1,800	1,800
Edgecombe.....	1,000	1,000	1,000	1,000
Gates.....				1,000
Graham.....	700	700	875	800
Greene.....	600	600	600	600
Halifax.....	1,000	1,000	1,000	1,200
Harnett.....	850	850	850	850
Haywood.....	800	1,000	1,000	1,000
Henderson.....	750	800	1,050	1,050
Hertford.....	750	750	750	900
*Hoke.....	450	450	450	225
Jackson.....	800	800	800	950
Jones.....	841	750	750	750
Johnston.....	1,250	1,250	1,250	1,250
Lee.....	400	400	500	500
Lenoir.....	800	800	800	800
Macon.....	750	750	750	750
Martin.....	1,050	1,050	1,050	1,050
McDowell.....	1,000	800	1,000	1,000
Montgomery.....	850	850	850	1,000
Moore.....	1,250	1,250	1,250	2,200
Nash.....	1,250	1,250	1,250	1,250
Northampton.....	750	750	750	1,000
Onslow.....	850	1,000	1,000	1,000
Pitt.....	1,200	1,200	1,200	1,200
Polk.....	750	750	750	1,000
Pender.....	1,500	1,500	1,500	1,500
Richmond.....	1,250	1,250	1,250	1,250
Robeson.....	1,800	1,800	1,800	1,800
Rutherford.....	1,000	1,300	1,300	1,600
Sampson.....	1,500	1,500	1,500	1,500
Scotland.....	600	600	600	600
Stanly.....	700	700		
Surry.....	600	700	700	700
Swain.....	1,000	1,000	1,000	1,000
Tennessee.....	600	900	900	1,200
Warren.....	1,015	1,026	750	1,000

\*Work in County discontinued January 1, 1942.

TABLE A—*Continued*  
COUNTIES COOPERATING AND ANNUAL SUMS MADE  
AVAILABLE BY THEM

County	1938-1939	1939-1940	1940-1941	1941-1942
Wake.....	\$ 1,000	\$ 1,000	\$ 1,200	\$ 1,200
Washington.....	1,165	1,050	1,050	1,250
Wayne.....	1,250	1,250	1,250	1,400
Wilkes.....	500	900	1,200	1,200
Wilson.....	900	900	900	900
Yancey.....	500	500	500	750
NUMBER COUNTIES COOPERATING.....	58	59	58	59

TABLE B  
FOREST PROTECTIVE ASSOCIATIONS

Name of Association	Assessment Rate	Location—County	Number Individuals in Associations		Acreage Listed	
			1940-41	1941-42	1940-41	1941-42
	<i>Cents</i>					
Elk Creek.....	1½	Watauga, Wilkes, Caldwell	1	1	40,000	40,000
South Mountain.....	1	Burke, McDowell, Rutherford, Cleveland.....	6	6	35,000	35,000
Moore County (Minimum Dues, \$5).....	2	Moore.....	14	14	14,000	10,000
Eureka.....	1	Beaufort.....	1	-----	8,000	-----
State College.....	1½	Onslow, Jones.....	1	1	84,000	84,000
Sandy Run.....	2½	Onslow.....	1	1	45,000	44,000
Camp Manufacturing Co..	1	Bertie, Gates, Hertford.....	1	-----	45,000	-----
Thompson.....	2	Martin.....	1	-----	15,000	-----
Holly Shelter.....	3	Pender.....	2	2	18,000	19,000
Orton.....	2½	Brunswick.....	10	8	47,000	47,000
Overhills.....	1	Harnett, Hoke, Cumberland	2	2	30,000	30,000
Riegel.....	1½	Brunswick, Columbus.....	1	1	135,000	140,000
Southern Brunswick.....	3½	Brunswick, Columbus.....	4	4	19,000	19,000
Waccamaw.....	4	Columbus, Bladen.....	7	7	35,000	35,000
TOTAL.....	-----	-----	52	47	570,000	503,000



TABLE C  
LIST OF STATE LOOKOUT TOWERS (to 6-30-42)

Name	Height	County	Date Erected	Built by	Initial Cost	Towerman's House
Mt. Mitchell.....	35 0''	Yancey.....	1927	Donation	\$ 25,000	3-room
High Windy.....	45 9''	Buncombe.....	1934	CCC	969	1-room
Tryon Mountain.....	45 9''	Polk.....	1934	CCC	873	1-room
Spivey Mountain.....	35 0''	Buncombe.....	1928	NCFS	778	1-room
Chambers Mountain.....	45 9''	Haywood.....	1934	CCC	942	1-room
Toxaway Mountain.....	45 9''	Transylvania-Jackson..	1935	CCC	889	1-room
Sassafras Mountain.....	35 0''	Transylvania.....	1932	NCFS & SCFS	750	SCFS home
Corbin Mountain.....	35 0''	Henderson.....	1932	NCFS & SCFS	750	SCFS home
Bearwallow Mountain.....	47 0''	Buncombe-Henderson..	1934	NCFS & CCC	800	1-room
Rendezvous Mountain.....	59 3''	Wilkes.....	1934	CCC	824	3-room
Pore's Knob.....	47 0''	Wilkes.....	1929	NCFS	861	1-room
Hibriten Mountain.....	80 0''	Caldwell.....	1927	NCFS & CCC	1,727	1-room
High Peak.....	59 3''	Burke.....	1934	CCC	981	1-room
Horse Ridge.....	35 0''	Burke.....	1928	NCFS	423	1-room
Biggerstaff Mountain.....	47 9''	Rutherford.....	1934	NCFS & CCC	749	1-room
Pinnacle Mountain.....	45 9''	Rutherford.....	1934	CCC	894	1-room
Roaring Gap.....	59 3''	Alleghany.....	1935	CCC	963	1-room
Scotland.....	72 9''	Scotland.....	1934	CCC	1,249	2-room
Southern Pines.....	72 9''	Moore.....	1934	CCC	991	4-room
Ellerbe.....	59 3''	Richmond.....	1934	CCC	1,273	4-room
Mt. Tirzah.....	72 9''	Person.....	1934	CCC	1,349	2-room
Bayleaf.....	99 9''	Wake.....	1937	CCC	1,761	4-room
Tuscarora.....	99 9''	Craven.....	1934	CCC	1,355	2-room
Wilmar.....	99 9''	Craven.....	1935	CCC	2,149	3-room
Wilson.....	99 9''	Wilson.....	1935	CCC	1,423	2-room
Dudley.....	99 9''	Wayne.....	1935	CCC	1,746	3-room
Snow Hill.....	86 3''	Greene.....	1934	CCC	1,397	2-room
Everett.....	99 9''	Beaufort.....	1936	CCC	1,410	2-room
Comfort.....	99 9''	Jones.....	1936	CCC	2,001	
Young.....	99 9''	Johnston.....	1936	CCC	1,519	
Earp.....	100 0''	Johnston.....	1936	Private & CCC	1,095	
Greenville.....	99 9''	Pitt.....	1936	CCC	1,574	
Kinston.....	99 9''	Lenoir.....	1937	CCC	1,938	4-room
Dixon.....	120 0''	Onslow.....	1937	CCC	2,459	4-room
Redditt.....	99 9''	Beaufort.....	1936	CCC	1,640	2-room
Deppe.....	120 0''	Onslow.....	1938	CCC	2,478	4-room
Edgecombe.....	93 0''	Edgecombe.....	1932	NCFS	1,029	3-room
Green Cross.....	99 9''	Bertie.....	1934	CCC	1,256	2-room
Woodville.....	80 0''	Bertie.....	1928	NCFS	1,358	2-room
Jackson.....	86 6''	Northampton.....	1934	CCC	1,335	2-room
Thomas.....	93 0''	Hertford.....	1929	NCFS	1,467	2-room
Liles.....	79 6''	Halifax.....	1935	CCC	1,087	2-room
Scotland Neck.....	99 9''	Halifax.....	1934	CCC	1,553	2-room
Swift Creek.....	79 6''	Nash.....	1935	CCC	1,221	2-room
Warren.....	80 0''	Warren.....	1932	NCFS	1,079	2-room
Plymouth.....	99 9''	Washington.....	1936	CCC	1,512	
Foreman.....	99 9''	Martin.....	1936	CCC	1,344	4-room
Camp.....	102 0''	Hertford.....	1928	Private & CCC	1,200	
Hassell.....	99 9''	Martin.....	1936	CCC	1,595	3-room
East Lake.....	120 0''	Dare.....	1938	CCC	3,018	2-room
Palestine.....	60 0''	Cumberland.....	1927	NCFS	1,152	2-room
Cedar Creek.....	99 9''	Cumberland.....	1934	CCC	2,121	1-room
Cameron Hill.....	100 0''	Harnett.....	1938	CCC	2,077	1-room
Mamers.....	72 9''	Harnett.....	1934	CCC	991	2-room

TABLE C—Continued  
LIST OF STATE LOOKOUT TOWERS (to 6-30-42)

Name	Height	County	Date Erected	Built by	Initial Cost	Towerman's House
Chadbourn.....	100'0"	Columbus.....	1930	NCFS	1,100	4-room
Nakina.....	100'0"	Columbus.....	1931	NCFS	1,150	
Waccamaw.....	100'0"	Columbus.....	1929	Private	1,200	
Proctorville.....	99'9"	Robeson.....	1934	CCC	1,281	2-room
Pembroke.....	85'0"	Robeson.....	1928	NCFS	1,396	2-room
Parkton.....	99'9"	Robeson.....	1929	NCFS	1,591	2-room
East Robeson.....	99'9"	Robeson.....	1935	CCC	1,715	2-room
Orton.....	80'0"	Brunswick.....	1931	Private & NCFS	1,100	
Shallotte.....	99'9"	Brunswick.....	1935	CCC	2,123	4-room
Bolivia.....	99'9"	Brunswick.....	1929	NCFS	1,556	4-room
Maco.....	99'9"	Brunswick.....	1936	CCC	1,698	4-room
Jones Lake.....	99'9"	Bladen.....	1935	CCC	1,532	4-room
Rose Hill.....	99'9"	Duplin.....	1936	CCC	1,630	4-room
Newkirk.....	99'9"	Sampson.....	1936	CCC	1,424	4-room
Chinquapin.....	99'9"	Pender.....	1936	CCC	1,824	4-room
Bannerman.....	120'0"	Pender.....	1927	CCC	2,534	
Ward's Corner.....	120'0"	Pender.....	1936	CCC	2,090	4-room
Pink Hill.....	99'9"	Duplin.....	1937	CCC	1,811	
Clinton.....	120'0"	Sampson.....	1937	CCC	3,234	4-room
Williams Lake.....	120'0"	Sampson.....	1937	CCC	2,094	4-room
Knightdale.....	120'0"	Wake.....	1938	CCC	2,781	4-room
Hoffman.....	99'9"	Richmond.....	1937	Resettlement Admin.	1,500	3-room
Hamlet.....	99'9"	Richmond.....	1937	Resettlement Admin.	1,500	3-room
Stumpy Point.....	120'0"	Dare.....	1939	CCC	2,597	
Scuppernong.....	120'0"	Washington.....	1939	CCC	2,728	
Glover.....	100'0"	Nash.....	1940	CCC	1,946	
Riegel.....	120'0"	Brunswick.....	1938	CCC	2,788	4-room
Lagoon.....	100'0"	Bladen.....	1937	Resettlement Admin.	1,521	
Rich Mountain.....	40'4"	Transylvania.....	1939	CCC	1,851	House on Tower
Hawshaw Mountain.....	45'9"	Avery.....	1934	CCC	1,041	1-room
*Big Dugger.....	60'0"	Watauga.....	1941	NCFS & CCC	1,841	
*Rocky Point.....	120'0"	Pender.....	1941	CCC	3,031	
*Giddenville.....	120'0"	Sampson.....	1942	CCC	2,840	
*Pittsboro.....	100'0"	Chatham.....	1940	CCC	1,830	
*Huntersville Mountain.....	52'0"	McDowell.....	1940	CCC	1,724	2-room
Apex.....	100'0"	Wake.....	1940	CCC		
*Clarkton.....	120'0"	Bladen.....	1941	CCC	2,246	
*Chesapeake.....	120'0"	Gates.....	1942	Private	3,317	
TOTAL TOWERS—92						
TOTAL HOUSES—67						

\*Towers erected in this Biennium.



## TABLE C-1

## FEDERAL TOWERS

The following Federal lookout towers, erected primarily for protection of Federally-owned lands, also overlook areas under protection by the State, and have served to supplement the State's tower system in locating fires on such areas:

*UNITED STATES FOREST SERVICE TOWERS*

Big Stomp in Cherokee County  
 Panther Qnob in Cherokee County  
 Hayoe Bald in Graham County  
 Teyahalee in Graham County  
 Wayah Bald in Macon County  
 Standing Indian in Macon County  
 Wesser Bald in Macon County  
 Satulah Mountain in Macon County  
 Yellow Mountain in Macon County  
 Cowee Bald in Jackson County  
 Rabun Bald in North Georgia  
 Rocky Top in North Georgia  
 Hightop in Haywood County  
 Sutton Mountain in Haywood County  
 Pilot Mountain in Transylvania County  
 Ferrin Knob in Buncombe County  
 Little Snowball in Buncombe County  
 Woods Knob in McDowell County  
 Green Knob in McDowell County  
 Chestnut Mountain in Avery County  
 Sand Mountain in Caldwell County  
 Rocky Knob in Caldwell County  
 Buck Mountain in Montgomery County  
 Croatan in Craven County  
 Harlowe in Craven County  
 Island Creek in Jones County  
 Black Swamp in Jones County  
 Pelletier in Carteret County  
 Newport in Carteret County  
 Frying Pan Mountain in Haywood County  
 Rich Mountain in Madison County  
 Duckett Top in Madison County  
 Devils Nest in Mitchell County  
 Table Rock in Burke County

*NATIONAL PARK SERVICE TOWERS*

Shuckstack in Swain County  
 High Rocks in Swain County  
 Frye Mountain in Swain County  
 Barnett Knob in Swain County

Mount Sterling in Haywood County  
 Spruce Mountain in Haywood County  
 White Rock in Haywood County

#### UNITED STATES INDIAN SERVICE TOWERS

Lickstone Mountain in Jackson County

#### STATE FOREST SERVICE TELEPHONE LINES:

As a part of its fire-detection and reporting system, the State Forest Service owned and operated, as of 6-30-42, the following mileage of telephone lines.

The lines connect lookout towers with Wardens and other towers, or with commercial telephone lines, or both; all are erected on poles of which most are creosoted pine; and nearly all are metallic circuit (2-wire) lines.

Forest Service District	Total Mileage of line
No. 1—Asheville .....	82.2
No. 2—Lenoir .....	164.5
No. 3—Rockingham .....	100.4
No. 4—New Bern .....	77.4
No. 5—Rocky Mount .....	58.4
No. 6—Fayetteville .....	508.4
Total for State .....	991.3

The great majority of these improvements have been constructed by the CCC, from camps under supervision of the State Forester, and at no direct cost to the State or Counties.

A record of the activities of the CCC Camps under supervision of the State Forest Service will be found elsewhere in this report. The truck trails constructed by these camps are low-standard roads built for accessibility into remote forest areas for fire control purposes only. The acceptance of these and other CCC constructed improvements by the State, upon completion by the CCC, renders the State responsible for their proper maintenance in the future, by agreement with the Federal Government.

The 92 existing State Forest Service towers represent an investment of approximately \$171,000, of which the 8 towers erected during this Biennium account for about \$20,000. The approximate 991 miles of telephone line represent an investment of about \$190,000. In the 67 tower houses there is invested about \$50,000. Accordingly, the State now owns towers, houses and telephone lines for forest fire control work that represent a total initial investment of about \$411,000.

These State-owned telephone lines are constructed and used for the activities of the State Forest Service, and are not competitive with commercial telephone systems.

The Department's long-time plan for adequate fire protection of all non-federal forest lands in the State calls for a system of 130 State-owned lookout towers, and about 1,200 miles of telephone line to connect such towers with Forest Wardens and with commercial telephone exchanges.



Towers and tower houses are erected on plots of ground of about  $\frac{1}{4}$  acre to 2 acres in size which are either deeded to the State, or under long-time lease at no cost. The smaller ones are in the mountain Districts, where towers are on mountain tops and are occupied only during the Spring and Fall fire season months. At some of the Coastal Plain towers the towerman is a year-long resident, living in the State-owned house with his family and working a garden on the tower site. Such year-long residence not only gives the State the benefit of the towerman's services during the almost year-long fire season in the Coastal Area but provides a full-time care-taker for the State's valuable property.

The placing of towers and telephone lines is governed by a Detection Plan which fits them into the existing system in such manner that eventually all of the State's forest area will be covered by these "eyes" of the State Forest Service. The plan takes into consideration the existing or proposed towers and telephone lines of other agencies such as the U. S. Forest Service and National Park Service, and also recognizes existing and proposed commercial telephone lines. In this way, duplication of visible areas from towers and of telephone communication is avoided.

*Fire-fighting Equipment:* Specialized equipment for forest fire-fighting such as fire line plows, portable gas-engine pumpers, tank-trucks and tractor-carrying trailers, have been developed by Federal and State Forest Services and private forestry agencies throughout the country. Most of such equipment is very effective in the suppression of forest fires particularly in such areas as North Carolina's Coastal Plain. Regardless, however, of its effectiveness, forest fire control funds in this State have not permitted its acquisition and use to any measurable extent. Instead it has been necessary to rely almost entirely on small hand tools. The rough usage such equipment must bear in fire-fighting renders annual replacement needs a very sizable item. Budgetary limitations during the biennium have held such replacements to a rigid minimum, and Table D in this report indicates these purchases.

The motor vehicles listed, as it will be seen, are largely  $\frac{1}{2}$ -ton pickup trucks. These are placed in the hands of County Forest Wardens and Association Rangers. They are used in transporting men and tools to fires and for other related forest fire control activities. Some of them, in the Coastal Plain Region, are equipped with built-in water tanks and motor-driven water pumps. All are equipped with removable fire-tool boxes which, when closed, serve as seats for the transporting of fire-fighters. The trailers, except for one, are small two-wheel affairs equipped with water drums and a set of standardized hand tools for fire fighting.

Financial limitations have prohibited the purchase of any appreciable amount of heavy equipment such as tractors, fire line plows and other equipment much needed during this biennium. The Fire Control Division was able to purchase largely through unmatched appropriations by counties and interested timberland owners, three small second hand crawler type tractors and one fire line plow. This equipment being light is used principally in maintenance of roads and fire lines and is not very effective in actual fire suppression work.

*Forest Fire Statistics:* Fire statistics for the past 4 fiscal years are given in Table E. In analyzing any such table, it is, of course, necessary to bear in mind the following factors:

TABLE D  
LIST OF PRINCIPAL ITEMS OF FIRE-FIGHTING EQUIPMENT

	Purchased During Biennium	Total on Hand Date of This Report
Automobiles.....	5	11
Pickups.....	32	65
1½ Ton Trucks.....	0	2
Tractors.....	3	4
Road Machines.....	0	1
Fire Line Plows.....	1	3
Axes.....	100	275
Pumps, Knapsack.....	527	2,276
Hooks, Brush.....	90	818
Rakes, Fire.....	159	4,513
Shovels.....	109	288
Swatters.....	171	856
Lanterns.....	2	30
Trailers.....	1	41

1. The funds available to do the job, as against the funds known to be required to do an adequate job.

2. The fact that climatic factors such as the distribution and amount of rain-fall, and human factors such as the distribution and intensity of logging operations, establishment of military camps and maneuver areas, etc., have a continuous bearing upon forest fire control. These variable factors cannot be estimated except in the light of past experience, and therefore without an adequate organization it must be expected that results obtained in forest fire control will vary far more widely than would be the case were such adequate resources available.

The fire season for the fiscal year 1938-1939 was about normal. Beginning with the fall of 1939 or the first half of the 1939-1940 fiscal year the picture changed considerably. The fall of 1939 was one of the worst fire seasons for the mountain region for the past 12 or 15 years. This was followed by an unusually dry spring season over the entire State. Likewise abnormally dry weather prevailed over the entire State during the fiscal years 1940-1941 and 1941-1942. Weather Bureau reports for the State as a whole show that 1941 ended with a rainfall of eleven inches below normal. Thus 1942 began with extremely low ground water levels; this is especially important in the swamp and peat-soil areas of the eastern Counties. Then in the early months of 1942 a deficiency existed with April, usually the peak month of the spring fire season, being the driest for that month in the past 55 years. As is usually the case in dry years, the winds were abnormally high and warm.

The table of statistics shows graphically the loss sustained each year from forest fires, even on areas given the existing measure of State Protection. The Department feels that adequate protection, as indicated in the footnote to the foregoing Progress Chart, would very materially reduce this annual and wasteful loss.



TABLE E

FOREST FIRE STATISTICS FOR STATE-PROTECTED AREAS  
BY FISCAL YEARS

	1938-1939	1939-1940	1940-1941	1941-1942
Area Under Protection—Acres.....	12,660,910	11,857,047	11,702,513	11,728,157
NUMBER OF FIRES BY CLASSES:				
A—Under ¼ acre.....	187	265	282	258
B—¼ to 10 acres.....	1,483	2,227	1,841	1,757
C—11 to 100 acres.....	1,415	2,068	2,022	1,771
D—101 to 500 acres.....	265	371	495	449
E—Over 500 acres.....	55	63	344	311
TOTAL.....	3,400	4,994	4,984	4,546
CAUSES OF FIRES:				
Brush Burning.....	682	1,050	865	921
Hunters, Fishermen, Campers.....	341	653	500	579
Railroads.....	88	181	230	254
Lumbering.....	49	78	154	123
Incendiary.....	854	1,216	1,210	959
Smokers.....	1,033	1,291	1,610	1,306
Lightning.....	17	45	36	24
Miscellaneous.....	336	478	379	380
Unknown.....		2		
TOTAL.....	3,400	4,994	4,984	4,546
AREA BURNED—ACRES:				
Merchantable Timber.....	50,288	61,508	152,955	159,501
Reproduction.....	138,365	157,570	419,481	356,889
Open Grass Land.....	26,217	28,859	142,933	58,240
TOTAL.....	214,810	247,937	715,369	574,630
Average Area per Fire—Acres.....	63	50	143	126
Per Cent of Protected Area Burned.....	1.7%	2.1%	6.10%	4.81%
DAMAGE:				
Merchantable Timber.....	\$ 154,213	\$ 209,910	\$ 527,978	\$ 481,593
Reproduction.....	196,022	237,827	510,339	586,302
Other.....	9,989	35,748	41,824	77,125
TOTAL.....	\$ 360,224	\$ 483,485	\$ 1,080,141	\$ 1,145,020
Average Damage per Fire.....	\$ 106	\$ 96	\$ 217	\$ 252
Total Fire Fighting Costs (Non-Salaried Personnel).....	12,234	18,148	21,608	22,300
Average Fire Fighting Costs per Fire.....	3.60	3.63	4.34	4.03
LAW ENFORCEMENT:				
Number of Prosecutions.....	363	455	347	373
Number of Convictions.....	301	409	313	310
Court Costs and Fines.....	\$ 2,607	\$ 4,176	\$ 3,830	\$ 3,265
RESPONSIBLE PARTIES OTHERWISE HANDLED:				
Number of Parties Billed for FF Costs.....	302	489	393	337
Number Making Payment.....	250	395	382	301
Amount Received.....	\$ 1,254	\$ 1,941	\$ 1,870	\$ 1,677

TABLE E—*Continued*  
FOREST FIRE STATISTICS FOR STATE-PROTECTED AREAS  
BY FISCAL YEARS

	1938-1939	1939-1940	1940-1941	1941-1942
<b>FF Costs Paid by Landowners:</b>				
Number of Parties Billed.....	12	6	12	5
Number Making Payment.....	10	6	11	5
Amount Received..... \$	63	\$ 17	\$ 121	\$ 69
Number of Burning Permits Issued.....	19,824	56,869	40,027	34,767
<b>WARDEN ACTIVITIES:</b>				
Number of Hours Worked.....	238,571	330,502	310,381	289,679
Miles Traveled—Car, Foot, Horse.....	537,915	732,647	756,723	735,546
Number of People Interviewed.....	103,814	85,315	20,388	25,412
Number of Sawmills Inspected.....	661	899	1,154	667
Number of Schools Visited.....	478	321	171	111

TABLE F  
COMPARISON OF STATE-PROTECTED AREAS AND UNPROTECTED  
AREAS (BY CALENDAR YEARS)

(Federal Lands Protected by Federal Agencies NOT Included)	State-Protected Forest Area		Unprotected Forest Area*		Totals for State	
	1940	1941	1940	1941	1940	1941
Forest Area in Acres.....	11,798,240	11,714,271	5,240,980	5,259,890	17,039,220	16,974,161
Number of Fires Reported.....	4,726	5,252	480	665	5,206	5,917
Area Burned—Acres.....	258,733	728,947	167,103	338,090	425,836	1,167,037
Size of Average Fire—Acres....	55	139	348	600	82	180
Per Cent of Total Forest Area Burned.....	2.19	6.22	3.19	6.42	2.49	6.21
Damage Done by Fires..... \$	452,844	\$ 1,120,397	\$ 258,145	\$ 503,281	\$ 710,989	\$ 1,623,678

\*Figures on fires, damage, etc., for the unprotected areas are obtained by an annual survey in such areas and are, of necessity, only estimates.

NOTE: In connection with the comparisons in the above table, it should be remembered that the State Forest Service has purposely extended its protection activities first to the areas of highest fire hazard and greatest need (the counties in the mountain and Coastal Plain regions). This policy will continue; consequently, it is to be expected that as these "bad fire areas" are brought under protection the per cent of area burned in the *unprotected* areas (as well as the total acreage burned) will decrease in relation to the same figures for the *protected* areas.



TABLE G  
COMPARATIVE STATISTICS (approximate figures)

State	Forest Area Needing State Fire Protection (Million Acres)	State's Total Fire Control Budget for F.Y. 1941-42	Amount per Forest Acre under State Protection	State's Direct Appropriation per Acre of Total Non-Federal Forest Area (F.Y. 1941-42)	* Annual Cost of ADEQUATE Fire Protection for Entire State	Per Cent of ADEQUATE Funds Available to State (F.Y. 1941-42)
NORTH CAROLINA.....	17.0	\$207,000	<i>Cents</i> 1.8	<i>Cents</i> 0.34	\$ 912,000	22.7
Florida.....	20.6	428,000	8.5	1.46	1,241,000	34.5
Louisiana.....	15.7	300,000	5.8	1.67	711,000	42.2
Texas.....	15.8	180,000	1.8	0.60	554,000	28.9
Arkansas.....	19.9	225,000	2.2	0.56	773,000	29.1
South Carolina.....	12.2	261,000	3.8	0.81	627,000	41.6
Tennessee.....	12.8	107,000	2.2	0.77	516,000	20.7
Alabama.....	18.1	271,000	2.9	0.53	785,000	34.5
Georgia.....	20.5	260,000	5.2	0.41	1,026,000	25.3
Mississippi.....	14.8	170,000	2.7	0.19	670,000	25.4
Oklahoma.....	12.7	53,000	3.8	0.16	398,000	13.3

\*Cost of Adequate protection has been arrived at by nearly all States in the Nation in conference with the U. S. Forest Service.

*State and Private CCC Camps:* Five State and Private camps largely engaged in the construction of fire control improvements were in operation at the beginning of the biennium. These were located as follows:

Camp P-66, Brevard, Transylvania Count  
 Camp S-68, Elizabethtown, Bladen County  
 Camp P-73, Bolton, Brunswick County  
 Camp-P-74, Maple Hill, Pender County  
 Camp P-75, Buffalo Cove, Caldwell County

In the fall of 1940, Camp P-66 at Brevard was moved to the Sandhills Land Use Area at Hoffman. The Camp worked chiefly on specialized forestry, game and recreational projects until its abandonment in the summer of 1941. The other camps listed remained at their above designated locations, devoting their efforts mainly to forest fire control projects, until abandonment. Camp P-73 at Bolton was abandoned in November 1941. The remaining three went out during the spring of 1942.

In order to complete desirable work which could not be undertaken from the main camps due to distance of travel, numerous side camps were established. Such camps were housed either in tents or house trailers.

*Work Accomplished by CCC:* During the period July 1, 1940, through May 1942, the month in which the last State and Private CCC Camp was abandoned, the following improvements were constructed and turned over to the State Forest Service and are now a part of the State's Forest Fire Control Improvement System: 105 miles of truck trails, 114 miles of telephone lines, 8 lookout towers, 7 houses, 3 warehouses, 1 office and other miscellaneous improvements. In addition to these improvements it is estimated that the CCC devoted approximately 12,000 man-days to forest fire fighting.

The above listed projects, exclusive of roads, involved an outlay in Federal funds of approximately \$75,685. This is also exclusive of new trucks and other equipment furnished by the camps and project materials and time furnished by the State Forest Service and its cooperators.

During the nine years in which State and Private CCC Camps were assigned to the State Forest Service and in operation in this State there have been completed and turned over to the State a total of 956 miles of telephone lines, 1,540 miles of truck trails, 68 lookout towers, 64 houses, 18 other buildings such as warehouses, offices, garages, etc., and numerous miscellaneous improvements. An estimated 32,000 man-days have been devoted to fighting forest fires.

The above is exclusive of Federal Funds and CCC man-days devoted to State Forest Service Nursery projects which are mentioned elsewhere in this report.

*Accomplishments:* At the Department's request, Section 4310 of the Consolidated Statutes ("willfully or negligently setting fire to woods and fields") was amended by the 1941 Legislature. The amendment was designed to broaden the scope of this particular section of the Forest Fire Laws and provides that the offender "upon conviction, shall be fined or imprisoned in the discretion of the court."

Attention is particularly invited to the activities of the Forest Wardens in enforcement of the State Forest Fire Laws, as shown in the latter part of Table E. The North Carolina Forest Service continues to be a leader among



the states in its law enforcement program. This program is looked upon by the Department as a definite phase of its over-all educational program, and as a step in the discharge of its public duties.

As is pointed out elsewhere in the report of the Forest Fire Control Branch, the calendar year of 1941 and the first half of 1942 were especially bad forest fire years, due in large part to the fact that persistent and accumulating rainfall deficiencies tremendously increased the fire risk throughout the State. These serious emergencies, especially during the months of April and May in 1941 and the month of April 1942 were reflected in reduced accomplishments along certain lines by the entire organization. For example, the emergencies represented such additional drains upon our finances that certain activities had to be drastically curtailed, such as supervisory personnel conferences, County Forest Warden meetings, and fire control equipment purchases. This situation again serves to point out the fact that the Department is not yet equipped with sufficient financial resources to handle satisfactorily an emergency fire season such as occurred in the two consecutive springs of 1941 and 1942.

*Conclusion:* The State Forest Service during this biennium maintained a salaried County Warden in each of the counties under protection. In several counties, also, there was a year-long towerman-smokechaser stationed at one of the State's lookout towers and living in the house attached thereto. Furthermore, the eight Forest Protection Association Rangers were year-long employees; consequently, a little further progress was made toward the goal of sufficient full-time personnel to handle effectively the fire control problem.

Again during this period no specific forestry educational program was carried out by State Forest Service personnel assigned entirely to this work; the reason is again lack of sufficient resources for this activity. However, such educational work as was feasible, such as contacts by the County Wardens with local schools, was carried on by the regular personnel, and in two or three sections of the State intensive educational programs carried on by Federal Forest Protection Agencies received considerable support from the State Forest Service in the way of contributed time and effort.

The Department's close cooperation with Federal Agencies interested in forest fire control on Federal lands has continued to be highly satisfactory. In the Spring of 1942 these cooperative endeavors had just begun to include work with several Branches of the Armed Forces, as the result of expanded military and naval activities particularly in Eastern North Carolina.

A footnote to the foregoing Progress Chart indicates the estimated cost of adequate and efficient forest fire control in this State to be 4.6c per forest acre per year. The gravity of the fire problem in North Carolina is illustrated by the fact that State Forest Service figures indicate average annual damage by forest fires in the State during the 10 years ending with 1941 to be about \$1,325,000. This situation itself, the Department feels, illustrates the justifiability of increased resources for the Department's forest fire control effort. The capital values at stake in this fire control matter are tremendous; in the State's economy, for example, the FOREST PRODUCTS INDUSTRIES rank third in importance, being exceeded only by the textile and tobacco industries. Forest land constitutes nearly 60% of our total land area, and 17,000,000 acres of North Carolina forest are almost wholly in private ownership.

## STATE PARKS AND STATE RECREATIONAL AREAS

The primary purpose of the Branch of State Parks is to establish, develop and operate a system of State parks and State recreational areas that will:

1. Meet adequately the needs of the people of North Carolina for outdoor recreation in natural surroundings,
2. Preserve and protect permanently for the public the most important scenic, historic and scientific sites in the State,
3. Provide interesting and worthwhile attractions and facilities to tourists and thus promote and increase our travel industry,

To achieve this purpose, these three major objectives must be successfully carried out:

1. Select and acquire land for the additional State parks and State recreational areas which are necessary to meet the needs of residents of and visitors to North Carolina for those types of wholesome outdoor recreation which State parks and State recreational areas can so well provide.
2. Plan and construct on State parks and State recreational areas the necessary recreational, public use and service facilities.
3. Operate and maintain these State parks and State recreational areas so that they will render maximum service and benefits to the public.

The successful achievement of these objectives is a difficult and complicated job that obviously should not be undertaken without the establishment of sound basic policies and the careful and skillful preparation of long-range and detailed plans by competent professionally trained personnel. Only by working under sound policies and carefully prepared plans can an adequate well rounded system of State parks and State recreational areas be established.

Realizing this, a careful and comprehensive study has been made of recreational needs in North Carolina. In this study, the Park, Parkway and Recreational Area Study of North Carolina, basic policies for the selection, acquisition, development, maintenance and operation of the North Carolina State Parks System have been established. This study also includes carefully prepared recommendations on the locations and types of new State parks and State recreational areas that must be acquired and developed to serve the recreational needs of residents of and visitors to North Carolina, long range plans for the development of a competent, well staffed Branch of State Parks organization to administer, plan, develop, maintain and operate efficiently the State parks and State recreational areas and plans for increasing the value and usefulness of these areas to the public. The job of preparing detailed development and construction plans is under-way, but is progressing slowly because of lack of professionally trained employees.

The present eleven areas now included in the North Carolina State Park System are an excellent nucleus on which to build an adequate system of State parks and State recreational areas. Our present State parks, being too few and far between, can serve only a small part of the State's population and thus large portions of the State and much of its population



do not receive benefits from State parks. To correct this unfortunate condition, the recommendations made in the North Carolina Park, Parkway and Recreational Area Study should be carried out.

Naturally, the work of the Branch of State Parks has been much affected by the War and every effort is being made to adjust activities to suit War needs. Wherever possible, the facilities of State parks and State recreational areas are contributing to the War effort. These contributions have ranged from turning entire parks over to the Federal Government for War purposes to arranging for recreational use of various parks by members of the Armed Forces.

Loss of trained personnel has been one of the most felt effects of present conditions. The Assistant Superintendent of State Parks, a reserve officer, was called to active duty with the Army on March 13, 1941. The acting Assistant Superintendent of State Parks employed to replace him left the Department on September 30, 1941, and is now on active duty as an officer of the United States Naval Reserve. Due to the scarcity of trained men, another Assistant Superintendent of State Parks was not secured until January 1, 1942. The State Park Architect went on duty with the Army Corps of Engineers in a civilian capacity on April 22, 1942, and so far it has been impossible satisfactorily to replace him. Other office employees have resigned to enter more remunerative fields and, in addition, a number of temporary employees experienced in park operation have been called to active military duty.

Another major result of the present emergency has been that construction and development have been almost entirely stopped. The Civilian Conservation Corps, which during the past seven years has done so much to make possible the improvement and development of the North Carolina State parks and recreational areas, has been disbanded and it is unlikely that any but very minor construction features will be undertaken for the duration of the War. This is as it should be since the development of State parks and recreational areas is a peace time activity and the materials and labor required for such development should now be used on work directly concerned with winning the War.

The third major effect of War conditions has been the curtailment of the operation of individual parks and recreational areas. Gasoline and tire rationing has so greatly reduced the ability of most persons to travel much outside city limits that attendance at the various State parks and State recreational areas during May and June 1942 was only about a third of what it was for the corresponding period of 1941. Reduced attendance has of course resulted in reduced income from operations and since a major portion of the costs of summer operation is paid from receipts, it was not feasible to put any State park in full operation during 1942. All State parks and State recreational areas were, however, kept open to the public for picnicking, camping, hiking, nature study and other uses not requiring additional expenditures for operating personnel and materials.

During the two years from July 1, 1940 to June 30, 1942, in spite of inadequate funds and personnel, progress has been made on the development of the State park and recreational area system. These accomplishments, though by no means adequate, have added to the usefulness and value of the State parks and State recreational areas now operated for the public by the

Department. Most of the work has been done by the Civilian Conservation Corps under the joint direction of the Department and the National Park Service, but important work has been done by the Work Projects Administration at Morrow Mountain, Fort Macon and Pettigrew State Parks.

*Mount Mitchell State Park:* Mount Mitchell State Park, located in Yancey County, was the first State park to be established in North Carolina, having been purchased with funds provided by the General Assembly of 1915. Within its 1,224 acres are included Mount Mitchell, the highest peak in Eastern United States, and virgin spruce and balsam forests. The views from Mount Mitchell and from other parts of the park are among the most beautiful and magnificent in the Southern Appalachians. Included in the park are hiking trails, limited camping facilities and a lookout tower on top of Mount Mitchell. The principal recreational uses are camping, hiking, picnicking and enjoyment of scenic beauty.

During the past two years, all construction and development at Mount Mitchell State Park was carried on by a Civilian Conservation Corps camp established there on June 24, 1940 and disbanded on November 15, 1941. Among the major jobs undertaken was the main water supply system to serve the proposed public use area. Work done on this system included the excavation of ditches for and the laying of 1,600 feet of 2-inch cast iron pipe, the construction of a 2,800 gallon concrete storage reservoir, excavation for a small impounding dam and reservoir, and planting and mulching of ditch lines to prevent erosion. Other work done included the enlargement of a pump house, planting of spruce and balsam seedlings at various points in the park, improvement of foot and fire trails, fire hazard reduction and production of materials for building purposes. Since the withdrawal of the Civilian Conservation Corps camp, no additional work has been done at Mount Mitchell State Park nor is it likely that any will be done for the duration of the War.

Access to Mount Mitchell State Park has been improved by the completion, except for surfacing, of the Blue Ridge Parkway to Swannanoa Gap and the action of the State Highway and Public Works Commission in establishing as a public road the 6½ miles of one way toll road between the Blue Ridge Parkway and Mount Mitchell State Park. As a result, in the latter part of the summer of 1940 and during 1941, attendance at Mount Mitchell State Park was very much increased. However, public access to the park, though thus improved, is still not satisfactory nor will it be until the permanent two-way road is built from the Blue Ridge Parkway to the present parking area within the park.

In the fall of 1941, at the request of the Department, the State Highway and Public Works Commission prepared plans for and invited bids on the construction of a road between the Blue Ridge Parkway and Mount Mitchell State Park; but no bids were received, apparently because of the uncertainty of securing the necessary construction materials. The Civilian Conservation Corps, under the direction of the Forestry Division, also prepared plans for the construction of a road within the park from Stepps Gap to the present parking area, but the transfer of the camp prevented any but very preliminary work on actual construction of this road. It now appears that the construction of this road cannot be undertaken until after the War.



In April 1941, the final step in removing the present road within Mount Mitchell State Park from private toll operation was taken when the State paid \$8,000 to the Big Tom Wilson Motor Road Company as compensation for the cancellation of its lease for the toll operation of the road. This money was secured by transfer from the State Highway and Public Works Commission as provided under the legislative act prohibiting the operation of privately owned toll roads within State parks.

The acquisition of additional land for Mount Mitchell State Park is still the most serious problem to be overcome. A survey has been made of the approximately 20 acres at the southern boundary of the park which are essential to the proper control, protection and development of the park and purchase of the land has been discussed with the owner, but so far lack of funds has made it impossible to secure the land.

In April 1942, the ever present threat of fire materialized when a large fire broke out from a saw mill and logging operation west of the park. This fire, which more seriously threatened the park than any in many years, was prevented from reaching the park by the prompt and effective efforts of the United States Forest Service and the Park Warden. The fire was fought and patrolled for more than a week and was finally extinguished by rains. Had this fire reached the park, it would have permanently destroyed some of the most scenic parts of it.

The United States Weather Bureau continued to operate a weather station at Mount Mitchell. To provide better living and working conditions for the two Weather Bureau observers, the Department made alterations in the Warden's cabin so as to provide separate quarters for these men.

*Fort Macon State Park:* Fort Macon State Park is in Carteret County on Bogue Island and extends some two miles westward from Beaufort Inlet. Fort Macon, built more than one hundred years ago, is the most important feature of this 500-acre park.

On December 21, 1941, the United States Army took over and occupied Fort Macon State Park. A lease in which was included complete and detailed descriptions of Fort Macon State Park and the structures and improvements on it was prepared by the Department and finally executed by the United States on April 27, 1942. Since this lease is for the duration of the War, the park is closed to public use for this period.

To provide more adequate bathing and picnicking facilities and thus make better provisions for recreational use of the park, a bathhouse, picnic grounds, boardwalk, parking area and water supply and sewage disposal systems were built within Fort Macon State Park under a Work Projects Administration project started on February 20, 1940. Although not fully completed because of the suspension in June 1941 of all non-military projects in the locality, the improvements were sufficiently far enough along to be usable had the park been operated during 1942.

Until it was occupied by the Army, the major operation of Fort Macon State Park consisted of providing guide, information and other services to visitors to the Fort, which was kept open all year, and providing guide and other services in the park as a whole. Fort Macon itself continued to be very interesting to the public. During the calendar year 1940 there were 14,319 visitors to the Fort and during the calendar year 1941, 17,278 visitors.

Since 1935, guide service at the Fort has been confined mainly to explanations of the physical features of the Fort itself and to some description of the battle of Fort Macon. It is felt that this type of guide service is entirely inadequate and too narrow in scope and that it should be replaced with guide and information service that will more adequately portray the history of Fort Macon and of the surrounding area before and during the War Between the States. To assist in this and to illustrate the portrayal and interpretation of Fort Macon and events connected with it, a museum should be established. Some progress has been made in plans for this, and although it may be several years before the park and Fort are again open to the public, work on these plans will be continued.

*Rendezvous Mountain State Park:* Rendezvous Mountain State Park, in Wilkes County, 15 miles northwest of North Wilkesboro, has an area of 142 acres. The upper slopes and peak of Rendezvous Mountain, an offshoot of the Blue Ridge, are included in the park. During the Revolutionary War, 225 men were selected from ten companies of soldiers assembled at Rendezvous Mountain. These 225 picked soldiers were placed under the command of Colonel Benjamin Cleveland, Captain (afterwards General) William Lenoir and nine other captains and, after joining other patriots at Quaker Meadows in Burke County, fought in the Battle of Kings Mountain. Rendezvous Mountain State Park was donated to the State in 1926 primarily for the purpose of commemorating this event.

No recreational facilities have been provided at this park, but two springs, accessible over easy trails, provide suitable places for picnicking. On the highest point in the park there is a fire lookout tower.

*Morrow Mountain State Park:* Morrow Mountain State Park, seven miles northeast of Albemarle, in Stanly County, lies in the Uwharrie Mountains along the Pee Dee River and is one of the most scenic areas in the Piedmont. It is decidedly mountainous in appearance and affords excellent panoramic views of the surrounding countryside. Swimming facilities are provided by a large modern bathhouse and swimming pool. Two picnic areas equipped with tables, benches, shelters, barbecue pits and other conveniences provide ample space for picnicking. Over ten miles of woodland trails offer varied scenery to hikers. Refreshments and other supplies are available within the park.

Construction and development at Morrow Mountain State Park was continued by the Civilian Conservation Corps until March 20, 1942, when the Civilian Conservation Corps camp there was transferred to a military area. During this period, working under the joint direction of the Department and the National Park Service, the Civilian Conservation Corps completed a ranger's residence, an equipment garage, a tool house and shop, a barn and quarters for summer employees, which together form one of the essential maintenance units of the park. These buildings have helped greatly to improve operation and maintenance. The Civilian Conservation Corps also enlarged the parking area on top of Morrow Mountain, a much needed improvement, constructed a telephone system within the park, improved the appearance of the park by planting native shrubs and trees around important buildings and along the park roads, built concrete bases for walks and terraces around the bathhouse, extended the foot trail system, improved fire



and truck trails, added a barbecue pit and shelter to the main picnic area and quarried and prepared stone for building purposes.

The Work Projects Administration continued work on Uwharrie Lodge during the latter half of 1940 and the first half of 1941, practically completing this important building which includes a kitchen and dining room, public assembly and lounge room and park headquarters.

With regular park personnel and extra labor a new water supply system was built to serve the picnic area on Morrow Mountain. This system, consisting of a five thousand gallon concrete storage reservoir, a deep well and a pumping system, was constructed to replace a previously built water supply system that had become inadequate. Other construction and improvement work done by park employees included a concrete terrace for the lodge.

As are most of the State parks and State recreational areas, Morrow Mountain State Park is kept open the year around and, particularly in the spring, summer and early fall, a great many people come to the park to picnic, hike and engage in other recreational activities. During the summer months, the period of heaviest attendance, the swimming pool, concessions and similar facilities are operated and are well patronized. The popularity of this State park is attested by the following attendance and public use figures:

	1940	1941
Total number using swimming pool.....	14,479	13,261
Total number picnicking.....	17,000	18,000
	(estimate)	(estimate)
Total summer attendance.....	52,125	48,212
Total attendance for the year.....	70,000	75,000

In the fall of 1941, the Army made use of Morrow Mountain State Park during the Carolina Maneuvers. Several units camped within the park and it served as a recreational center for some of the units participating in the maneuvers. The park has also been used rather extensively by small groups of soldiers from nearby military establishments.

During the first six months of 1942, the park was kept open for public use, and hiking, picnicking, camping and similar facilities were available to park users. Because of travel limitations imposed by gasoline and tire rationing, the swimming pool, restaurant, lodge, and concessions were not operated. This method of operation will be continued during the remainder of 1942.

*Hanging Rock State Park:* Hanging Rock State Park is in Stokes County four miles north-east of Danbury and thirty miles north of Winston-Salem. Being in the Sauratown Mountains, it contains rugged mountaineous terrain and includes such peaks as Hanging Rock, Moore's Knob, and Cooks' Wall. Several clear mountain streams, water falls and cascades are within the 3,865 acres of this park. The wealth of plant life and the geological formations at the park are very interesting. Among the recreational facilities provided in the park are a beautiful twelve acre lake, a large modern bathhouse, a protected swimming beach, picnic grounds, trails and adequate parking areas.

Until March 20, 1942 when the Civilian Conservation Corps camp there was transferred to a military area, the Civilian Conservation Corps continued construction and development at Hanging Rock State Park. Among the major accomplishments were the completion of a parking area with a capacity of 350 cars and the completion of the bridge and road leading to the proposed cabin area. The Civilian Conservation Corps also built a barbecue pit, outdoor fire places, tables and benches and other conveniences in the picnic area, constructed stone guard rails along the park road, installed permanent concrete road drainage gutters which have almost entirely eliminated erosion and the necessity for gutter maintenance, planted native shrubs and trees around buildings and along roads and trails, did erosion control work around the lake and carried out fire hazard reduction measures where necessary. Work was begun on the lodge and administration building but only a little work was done on this structure before the Civilian Conservation Corps camp was transferred and it is doubtful that the building can be completed under present conditions.

Since the removal of the Civilian Conservation Corps camp, development has practically ceased, although employees at the park have done some additional work on erosion control and construction of guard rails.

Efforts to secure the necessary land for the right of way have been unsuccessful, so the park road system is still incomplete and access to the park is entirely unsatisfactory. Under these conditions, traffic cannot be safely handled, and it was impossible to open fully the park for public use during the summers of 1940 and 1941. Even so, use of Hanging Rock State Park has steadily increased. During the past two years, facilities have been available for picnicking, hiking, camping, nature study and similar activities, but operation of the park for public benefit has been severely handicapped by the lack of a satisfactory entrance road.

No progress has been made in acquiring the other additional land required for the successful development and operation of Hanging Rock State Park except for the purchase at \$4 an acre of a small tract of 168 acres which came into the possession of a private individual through a court order. Land acquisition is the most pressing problem at Hanging Rock State Park and the main obstacle to full development and public use of this park has so far been lack of certain badly needed tracts of land.

Most seriously needed of all is additional land for the park road right-of-way, but other land must also be acquired before the park can be satisfactorily operated, maintained and protected for public use. Two things have prevented the acquisition of this land—lack of funds and not having the power of eminent domain in Stokes County. It is indeed regrettable that this situation prevents the 300,000 people in the ten counties within easy reach of Hanging Rock State Park from getting the full use and benefit they are entitled to get from it.

After the withdrawal of the Civilian Conservation Corps camp, an epidemic of forest fires broke out around the park and one fire occurred within the park. Fortunately, prompt action by the Park Ranger and a crew of paid fire fighters prevented serious damage to the park itself. Since Stokes County is not under the Department forest fire control system, danger from fire at Hanging Rock State Park is ever present, and to protect the park,



frequent patrols must be made not only within the park itself, but over a large territory adjoining it.

*Cape Hatteras (Phipps Memorial) State Park:* Cape Hatteras State Park is on the "Banks" in Dare County some 30 miles south of Oregon Inlet. Included in the park, which has an area of 1,100 acres, is Cape Hatteras and adjacent to it is the Cape Hatteras Lighthouse National Monument.

From June 1940, until the middle of January 1941, work at Cape Hatteras State Park was continued by the Civilian Conservation Corps camp established there in the fall of 1935. The work of the Civilian Conservation Corps included planting of native trees, shrubs and grasses for sand erosion control, the erection of sand fences and other sand fixation work, work on the construction of a road from the Cape Hatteras Lighthouse to Cape Hatteras itself, additional repairs and alterations to the lighthouse buildings to provide living quarters for visitors to the area and the operation of a nursery to propagate native plants for erosion planting. In keeping with previously agreed upon policy, the work program was planned so that it included only such as would fit in with the proposed treatment of the Cape Hatteras National Seashore, when Cape Hatteras becomes a part of the National Area.

After the removal of the main body of the Civilian Conservation Corps camp in January 1941, a small detail of 25 men remained at the park until February 28, 1942. The work of this detail was mainly concerned with the Federally-owned Cape Hatteras Lighthouse National Monument.

Although no definite date for doing so has been set, Cape Hatteras State Park is to be turned over to the Federal Government as part of the Cape Hatteras National Seashore. The length of time which the Department will continue to have jurisdiction over the Park is so indefinite that it has not been considered feasible to operate actively the park or the facilities in it for public use. Operation of the area has, therefore, consisted mainly of keeping it open to the public for fishing and other uses.

*Jones Lake Recreational Area:* Jones Lake Recreational Area is a part of the Bladen Lakes Land Use Area which is administered and operated by the Forestry Division as a State forest under a long term agreement with the Federal Government. This area is maintained and operated for negro use and includes State-owned Jones Lake which is the most important natural feature of the area. The major recreational facilities include a large, well-equipped bathhouse, a protected beach and water area in the lake for swimming, boats, ample parking areas, a refreshment stand and picnic grounds.

Jones Lake Recreational Area has continued to be very popular and thousand of negroes use it each year. The greatest use occurs during the summer months when all of the facilities are operated. Swimming, boating, hiking, fishing, picnicking and outdoor games are among the principal recreational uses. The area is particularly popular for group picnicking and many large and small groups come to it for a day's outing.

Estimated attendance figures are:

	1940	1941
Total number swimming.....	5,000	7,500
Total number boating.....	2,000	3,000
Total number picnicking.....	10,000	23,000
Total summer attendance.....	25,000	38,000

Unfortunately, inadequacy of State appropriations has made it impossible to undertake further development at Jones Lake Recreational Area either with or without assistance from Work Projects Administration, Civilian Conservation Corps or other Federal agencies. Much needed additional facilities include a group camp, a tent camping area and structures and other facilities for organized recreation.

*Singletary Lake Group Camp:* Also a part of the Bladen Lakes Land Use Area, Singletary Lake Group Camp is located on State-owned Singletary Lake. At this area is a completely equipped group camp with accommodations for one hundred persons.

Singletary Lake Group Camp is operated entirely for group camping. Organizations such as Boy Scouts, 4-H Clubs and Young Men's Christian Association fresh-air camps use the area each summer for periods of from one to several weeks. During the summer of 1940, it was used for a total of 2,170 camper days and during 1941, it was used for a total of 2,817 camper days.

Singletary Lake, as are the other State-owned lakes in the Bladen Lakes Land Use Area, is open to public fishing under a permit system.

Funds not being available, no new construction or development has been undertaken at this area during the past two years, although better swimming facilities and play areas are needed.

*Pettigrew State Park:* Pettigrew State Park, located on portions of two old plantations, Bonarva and Somerset, includes State-owned Lake Phelps and some two hundred acres of land leased to the State by the Federal Government for a period of 99 years. Lake Phelps, 16,600 acres in extent, is one of the most beautiful of North Carolina's natural lakes and has excellent possibilities for boating, fishing and other recreational uses. The Collins house, "Somerset," six of the original buildings around it and the four story Collins barn are on the park.

On March 20, 1941, the restoration of the historic structures at Pettigrew State Park was begun under a Work Projects Administration project and continued until June 24, 1942. Excellent work was done on the restoration of the Collins house and the buildings surrounding it, including the old summer kitchen, the foreman's house or "Colony House," the milk house and the flower house. To make the Collins house and foreman's house suitable for use as an inn, water supply and sewer systems and electric wiring were installed. These conveniences were so installed that they did no damage to the buildings and, if it is later possible to restore fully the buildings to their original condition, they can be easily removed. Great care was exercised to see that all the other work done duplicates so far as possible the original condition of the structures. Funds were not available to restore the Collins barn, the next important work that should be done.

Eventually, Pettigrew State Park will be operated primarily to portray to the public many aspects of life on a large plantation in the years before



the War Between the States but recreational use of Lake Phelps will be encouraged and provided for. Facilities for recreational use will be kept entirely separate from that portion of the park to be devoted to historic purposes so as not to detract from historic interest and values.

To portray adequately the life and times of the pre-Civil War plantations owned by the Collins and Pettigrew families, much additional restoration work must be done. Not only the existing buildings, but also the grounds must be restored. Non-existent buildings should be restored or the sites on which they were located should be accurately marked. A museum should be established and some of the agricultural practices of the old plantation should be carried on.

To be truly interesting and educational, this portrayal of a bygone phase of the State's history must be authentic in every detail. Careful research has, therefore, been undertaken to secure accurate data on which to develop the historic values of Pettigrew State Park and accurate measured drawings are being made of existing structures and other physical improvements.

One of the serious problems at Pettigrew State Park concerns Lake Phelps. During the past six years or so, the water level of the lake has been much lowered to the detriment of the shore line, the natural beauty of the lake and the fish life. Preliminary study seems to indicate that several factors, among them several dry seasons and the use of water from the lake by the Farm Security Administration, have caused the lowering of the lake. A careful study should be made to determine exactly what has caused the lowering of the water level, and to determine what can be done to restore the lake to its normal level.

Operation of Pettigrew State Park has so far consisted of protection and maintenance of the area and the structures on it and some guide service to visitors. Even if it were possible under present conditions to purchase the equipment necessary to operate the Collins house as an inn, so long as gasoline rationing remains in effect public use of the area is likely to be too small to justify either the expense of equipping the building or of operating it as an inn.

*Sandhills Recreational Area:* Sandhills Recreational Area is a part of the North Carolina Wildlife Management Area (formerly called Sandhills Co-operative Land Use Area) and is located in Richmond County, 12 miles south of Aberdeen, just off United States Highway 1. The major public use facilities on this area are ten completely equipped and furnished vacation cabins suitable for individual or group use, a small lake for the use of the cabin occupants and the assembly and recreational lodge.

During the Spring of 1941, the Civilian Conservation Corps camp assigned to the North Carolina Wildlife Management Area constructed a much needed swimming dock on the lake and completed road and beach improvement projects.

From June 30, 1940 until September 15, 1941, Forestry Division operation included the maintenance and operation for individual and group use of the ten vacation cabins, the lodge and the lake. Although these facilities were built primarily for general public use, the use of them by individuals and family groups has always been small. To increase both the use of and the revenue from this area, arrangements were made to rent the

cabins to such organized groups as 4-H clubs and Boy Scout Councils for group camping. During 1940 the area was used for a total of 1,014 camper days and 1,020 cabin days and during 1941 the area was used by organized groups for seven weeks and the cabins were used by 81 persons.

Until September 15, 1941, when the entire North Carolina Wildlife Management Area was turned over to the United States Army for a three months period during the Carolina Maneuvers, the Forestry Division continued to administer, operate and maintain the Sandhills Recreational Area as it had been doing since July 1, 1939. On October 3, 1941, the entire area having been previously designated as a wildlife management area by the Federal government, the Division of Game and Inland Fisheries took over all the administration, operation and maintenance of the North Carolina Wildlife Management Area and on that date the Forestry Division relinquished responsibility for the operation and maintenance of the Sandhills Recreational Area.

*Millstone Rock Group Camp:* Millstone Rock Group Camp, also a part of the North Carolina Wildlife Management Area, includes a beautiful artificial lake and camping accommodations for one hundred persons. Under the terms of the agreement of March 4, 1940 between the Department and the North Carolina Agricultural Extension Service of North Carolina State College, this group camp continued to be used and operated by the 4-H Clubs of the State.

*Town Creek Indian Mound:* Town Creek Indian Mound, located at the junction of Town Creek and Little River in Montgomery County one mile north of the Richmond County line, is a pre-historic Indian site containing the only raised council house or temple site in North Carolina east of the mountains. From research and excavation so far completed, it appears that there were several occupations of the site by both pre-historic and historic Indians and that further research should yield many other interesting facts about these aboriginal inhabitants. Town Creek Indian Mound is, therefore, one of the most important Indian sites in the State, and when proposed plans for its development are completed, it should prove to be extremely interesting and instructive to the general public.

Under the joint direction of the Department of Conservation and Development, the State Museum, the University of North Carolina and the North Carolina Archaeological Society, and with funds furnished by these agencies and by the Work Projects Administration, excavation, research and other archaeological work was continued on a reduced scale until June 1942 when the Work Projects Administration project was suspended. Complete records have been kept of the work done and the great variety of interesting artifacts secured from the site have been carefully cataloged and are stored partly at the University and partly in the Department's vault.

It is planned to develop and operate this area exclusively for the portrayal of the pre-historic and historic Indian life that once went on around it. To do this effectively, about 30 acres adjacent to the Mound must be acquired and added to the 1.1 acres now owned by the State. Proposed treatment of the area includes the construction and establishment of a museum, restoration of part of the village site and stockade and of some of the dwellings, as well as the protection and exhibition of a few of the graves.



*Crabtree Creek Recreational Demonstration Area:* Located in Wake County on Highway 70A, midway between Raleigh and Durham, Crabtree Creek Recreational Demonstration Area contains 4,090 acres. The area was purchased by the Federal Government and is now operated by the National Park Service but will eventually be turned over to the Department for administration, operation and maintenance. During the past two years, National Park Service operation of Crabtree Creek Recreational Area has included the operation of three group camps for white use, one group camp for negro use and trails and limited picnicking facilities for general public use. Besides this, it is very interesting to note that the Civilian Conservation Corps camp buildings and the group camps have been used as rest-camps for British sailors.

Although it was established primarily for the use of such organized groups as Boy Scouts, Girl Scouts and 4-H Clubs, the Department has emphasized to the National Park Service the need of such general public use facilities as a bathhouse and beach area, picnicking grounds, camping grounds and so forth. Until the summer of 1940, construction and development at Crabtree Creek, carried on under the joint supervision of the National Park Service and the Department with special ERA allotments, was directed mainly toward the construction of group camps and group use facilities but with the establishment of a Civilian Conservation Corps camp at this area on August 2, 1940, it was possible to begin work on construction of recreational facilities for the general public. The removal of this camp to a military area on January 5, 1941, prevented carrying this work far enough to make these recreational facilities usable. Work done by the Civilian Conservation Corps included road building, construction of water and sewer systems and grading of parking areas.

To develop the proposed day use area, additional land on the western boundary of the area was needed for a lake site. Federal funds for the purchase of this land being no longer available, the Department purchased a small tract of 8½ acres to be used as a part of the day use area. Under the arrangements made, the State has retained title to this land.

*State Lakes:* Of the seven State-owned lakes under the administration of the Department, Jones Lake, Singletary Lake and Lake Phelps are administered as parts of existing State parks or recreational areas, and Salter's Lake, being within its boundaries, is administered as a part of the Bladen Lakes Land Use Area. The administration of these four lakes and of Black Lake, which is near the Bladen Lakes Land Use Area and not readily accessible, has presented no unusual difficulties or problems.

The administration of White Lake and Lake Waccamaw is, however, somewhat more difficult because the Department owns no land around these lakes. By employing a lake warden at White Lake during the summer months, it has been possible to control more effectively the uses of White Lake and to reduce the extent of some of the objectionable practices that have been indulged in in the past. In spite of the lake warden's efforts, however, several written and a number of verbal complaints concerning the use of high powered speed boats on White Lake were received in 1940. These complaints were that speed boats were emptying oil on the lake, disturbing bathers and at times endangering the safety of other users of White Lake. In an effort to correct some of these conditions, in the Spring of 1941 representatives of the

Department met with a large group of land owners and others interested in White Lake to discuss ways and means of regulating the use of White Lake for the benefit of all its users. After this meeting, conditions seemed to improve somewhat.

As provided in Chapter 340 of the Public Laws of 1941, the Governor and the Council of State allotted \$10,000 to the Department from the Contingency and Emergency Fund for the reconstruction or construction of a spillway at the south side of Lake Waccamaw for the purpose of maintaining a constant water level in the lake. The old timber dam there had developed serious seepage and the water in the lake had fallen to what was considered to be too low a level. The Division of Water Resources prepared the plans and specifications for the new spillway and supervised its construction.

*Legislation:* The most important legislation affecting the State Parks System was the authorization given the Department under Chapter 118 of the Public Laws of 1941 to exercise the right of eminent domain in acquiring land for State parks and State forests. This much needed legislation will greatly expedite the work of the Department in providing for the people of North Carolina an adequate State park and recreational area system.

Stokes County, at the insistence of its House member, was exempted from the provisions of this act, but it is hoped that this exemption can be removed and that the act will apply to Stokes as well as to the other 99 counties in the State.

*Park, Parkway and Recreational Area Study:* The North Carolina Park, Parkway and Recreational Area Study, begun in the fall of 1938, was completed in December 1940 and approved by the Board of Conservation and Development at its January 1941 meeting. A little later, it received the concurrence of the National Park Service. Based on careful study and analysis of such basic data as population trends and characteristics, scenic resources, existing and potential recreational resources and recreational needs, this report is a carefully prepared comprehensive plan for the establishment, administration and operation of an adequate State park and recreational area system for North Carolina. It includes recommendations on the new State parks and State recreational areas that must be acquired to create a well-rounded State park and recreational area system that will serve adequately the people of North Carolina, recommendations on the development of these and existing areas, and basic policies for the selection, development, administration, operation and maintenance of State parks and State recreational areas. The value of having this comprehensive written plan and these basic policies adopted by the Department to guide its work can hardly be over-emphasized.

*Investigation of Proposed New State Parks:* As a direct result of mentioning during the course of talks given to civic organizations in Hickory the recommendations made in the Recreation Study that a State park be established somewhere in the vicinity of Alexander, Burke or Caldwell Counties, various organizations and individuals in these counties became very much interested in locating suitable areas for a State park. In all, three sites in Caldwell County, one site in Alexander County and two sites in Burke County were suggested. Each of these sites was very carefully investigated to determine its scenic value, its possibilities for recreational development, its location in relation to population concentrations and the probable number of



users within reasonable driving distances of it. Of all the sites investigated, one in the South Mountains of Burke County proved to meet best all the requirements. Preliminary steps for acquiring this site were taken by the Junior Chamber of Commerce and the Chamber of Commerce of Morganton but the progress of actual land acquisition has been interrupted by the War.

*The Association of Southeastern State Park Directors:* State park officials in the Southern States have long felt the need of a regional organization through which to promote and establish high professional standards for the administration, development, operation and maintenance of State park systems, and to improve the State park systems of the South. To meet this need, State park officials from nine Southern States met in March 1942 and formed the Association of Southeastern State Park Directors. This association, the first of its kind in the United States, is composed entirely of State officials and State employees directly concerned with State park systems and programs. The formation of this association is one of the most important steps taken by Southern State park officials in recent years and it will be of great value in improving the development, administration and operation of State parks and State recreational areas in the Southern States.

North Carolina members of the Association of Southeastern State Park Directors are the Director of the Department of Conservation and Development, the Assistant Superintendent of State Parks and the Superintendent of State Parks who was elected Secretary-Treasurer of the organization.

*Recommendations:* Under present conditions, it is recommended that during the next few years the work of the Branch of State Parks be concentrated on these four things:

1. The operation, to the very best of our ability, of the areas and facilities that are now available for public use so that they will afford a maximum of service to the public. Of course, the scope of operation must be adjusted to changing conditions and to the ability of the public to reach and make use of the areas.
2. Adequate maintenance of present State parks and State recreational areas and of the improvements on them.
3. Acquisition of land needed for certain of the present State parks and acquisition of land for new State parks and State recreational areas as recommended in the North Carolina Park, Parkway and Recreational Area Study.
4. Preparation of plans for future construction and development.

The first two of these involve simply protecting the State's investment and property from damage, deterioration and loss of value, making the present State parks as useful to the public and the prosecution of the War as conditions permit, and at the same time improving methods of operation and maintenance and consolidating the gains made during the past seven years.

The last two of these are concerned with the highly important job of planning for the future and securing the necessary lands upon which to execute these plans. We certainly expect to have a future, our kind of future, or we wouldn't be fighting this war. We are fighting now, as we have before, for the right and privilege of living under a form of government of our own choosing, a form of government that guarantees freedom, opportunity and the

pursuit of happiness. In short, we are fighting for a Government for the benefit of the people instead of people for the benefit of a Government.

One of the important benefits of the sort of Government we are fighting to keep is that of holding land in public ownership or trust for the use and pleasure of every citizen as is done when National, State, county or municipal parks are established. For the people of this country who so enjoy and need outdoor recreation, it is of great social value to establish within reasonable travel distance publicly owned natural areas where people can camp, hike, fish, picnic, see the wonders of nature, swim, boat and do all the other things that afford the refreshment that comes only from contact with natural things. It behooves us, therefore, to do everything that can be done under present circumstances to acquire the areas needed to enable the North Carolina State park and recreational area system to do its full part in the provision of these social benefits and to plan carefully the development of existing and new areas.

With the Nation drawing heavily on all of its resources in the tremendous War program, it is inevitable that for some time to come little if any progress can be made on constructing physical improvements and building recreational facilities. This fact has its bright side, however, since suspension of construction programs and restriction of operation programs provide us with an opportunity of doing something concrete about land acquisition and planning because money available for construction and operation could very easily be made available for land acquisition and planning instead. There are practical reasons for acquiring land and doing advance planning now. After the War it is entirely possible that a large public works program will be undertaken to provide work for the millions of men who will be discharged from military services and the millions of men who will be released from War industries. Past experiences leave no doubt that the agencies which will benefit most in such a public works program will be those which have ready well conceived plans for the utilization of public works program funds. It is strongly recommended, therefore, that every effort be made to employ in the Branch of State Parks the technical and professional personnel required for planning and that funds formerly available for construction purposes be made available for land acquisition.

*Acknowledgments:* During the past two years various State and Federal agencies have assisted the Department in construction, development and improvement of the State parks and State recreational areas. Had not this assistance been rendered, much less would have been accomplished. Among the organizations to which thanks are especially due are:

*Civilian Conservation Corps* which has maintained camps at Mount Mitchell, Morrow Mountain, Hanging Rock and Cape Hatteras State Parks. The Civilian Conservation Corps, more than any other one agency, has contributed to the development of the North Carolina State Parks. Without the help and cooperation of this organization since 1935, only a fraction of the work done during the last seven years would have been possible.

*National Park Service* which has jointly supervised with the Department the work of the Civilian Conservation Corps camps assigned to State Parks, has supplied valuable technical services and advice and has in other ways cooperated with the Department in the development of the various State parks, and has made possible and assisted in carrying out the Recreation Study.



*Work Projects Administration* which, by supplying funds and labor, has made it possible to construct a lodge at Morrow Mountain State Park, build a bathhouse and beach development at Fort Macon State Park, do the restoration work at Pettigrew State Park and to make the Recreation Study.

## FOREST MANAGEMENT

### *Private Land.*

During the last biennium Roger D. Huff, Forest Management Assistant, loaned to this Department by the U. S. Forest Service, has devoted his full time to forest management work on private holdings. The demand for this service has been continually on the increase and during the last two years practically all of this work has been done in compliance with requests from landowners who desire assistance and advice relative to managing their woodlands and marketing their forest products. Although it is very probable that many more owners would be interested in instituting better forest practices on their lands if they were approached and given the proper encouragement, personnel is not available to handle much more work than that necessary to comply with the requests received by the Division.

As brought out in the accompanying tabulation, 120 forest tracts comprising 333,993 acres, were examined. Reports, including recommendations for managing the lands so as to keep them in a permanently productive condition over a period of years, were prepared for each property and furnished the owner. Due to the fact that problems and conditions are different for practically every tract, recommendations made for any one woodland were designed to meet the needs of that particular area. For example, in one case where the land had been cut very closely in recent years, it might be recommended that the stand be allowed to grow and nothing be done until the trees become crowded, except protect the area from fire, while in other cases where there are marketable products present, a sale of saw timber, poles, piling or pulpwood might be advised. In most cases where there was timber ready for harvesting or young stands in need of thinning, selective cutting was advised. In a few cases where the owner was hard pressed by financial obligations or was unwilling to sell on a selective basis, a compromise diameter limit was accepted but in most of these cases this limit was 2 inches or more above the customary 8-inch limit, which leaves most forest lands in a poor productive condition.

Of the 120 cooperators, 20 have already completed or have started cutting their timber on a selective basis and 15 have made plans to do so in the future. Others have taken steps forward in the handling of their woodland by planting forest tree seedlings and removing undesirable trees so as to improve the quality of the timber and increase the production of their land in future years. It is interesting to note that only two owners with whom we have cooperated, have sold their timber on an 8-inch stump diameter basis which amounts to clear-cutting in most tracts.

### *Forest Planting.*

The N. C. Department of Conservation and Development is not the only agency growing and distributing forest tree seedlings to North Carolina landowners, though it is the chief one. Besides the two State Nurseries reported on below, the Soil Conservation Service operates a nursery on land leased

## TRACTS FOR WHICH FORESTRY ADVICE WAS FURNISHED

July 1, 1940-June 30, 1942

County	Number of Tracts	Acres by Tracts	Acreage by Counties	Results
Anson.....	1	1,000	1,000	Selective cutting
Ashe.....	1	500	500	None as yet
Bertie.....	1	100	100	Selective cutting
Brunswick.....	5	175	-----	None
		2,500	-----	None as yet
		350	-----	Increased diameter limit
		14,700	-----	Planted 30 acres
		88	17,813	Plans selective cutting
Cabarrus.....	2	800	-----	Selective cutting—cedar
		75	875	Selective cutting—cedar
Caldwell.....	2	600	-----	None
		350	950	None
Carteret.....	3	8,000	-----	Selective cutting underway
		9,000	-----	None
		26,000	43,000	None
Caswell.....	1	100	100	Selective cutting complete
Chatham.....	4	425	-----	None as yet
		787	-----	None
		140	-----	Selective cutting complete
		120	1,472	None
Cleveland.....	3	25	-----	Selective cutting
		25	-----	Selective cutting
		50	100	Selective cutting
Columbus.....	3	680	-----	None
		30	-----	Part of tract clean cut
		100	810	Selective cutting planned
Craven.....	2	900	-----	Selective cutting
		1,000	1,900	None
Currituck.....	2	1,100	-----	None
		163	1,263	None
Durham.....	2	4,000	-----	Selective cutting
		1,200	5,200	None as yet
Forsyth.....	2	500	-----	None as yet
		125	625	None as yet
Franklin.....	6	95	-----	Selective cutting complete
		500	-----	None as yet
		65	-----	Selective cutting
		90	-----	Selective cutting complete
		250	-----	None as yet
		200	1,200	None
Gaston.....	1	210	210	Selective cutting under way
Graham.....	1	21,000	21,000	None
Granville.....	4	1,500	-----	Increased diameter limit
		175	-----	None as yet
		60	-----	Selective cutting complete
		126	1,861	Selective cutting planned
Greene.....	1	50	50	None as yet
Guilford.....	5	200	-----	Selective cutting—30 acres
		800	-----	Selective cutting planned
		30	-----	Selective cutting complete
		145	-----	Selective cutting complete
		2,300	3,475	None
Halifax.....	3	725	-----	None as yet
		140	-----	None as yet
		1,750	2,615	None



TRACTS FOR WHICH FORESTRY ADVICE WAS FURNISHED—*Continued*

County	Number of Tracts	Acres by Tracts	Acreage by Counties	Results
Harnett.....	1	80	80	Selective cutting complete
Henderson.....	3	2,100	-----	Good forest practices planned
		26,000	-----	None
		1,200	29,300	Good forest practices planned
Hertford.....	4	50,000	-----	Improved cutting on part
		100	-----	None
		200	-----	None
		140	50,440	Selective cutting started
Hoke.....	1	48	48	Selective cutting planned
Jackson.....	2	37,000	-----	None
		1,600	38,600	None
Lee.....	3	600	-----	Selective cutting planned
		215	-----	None as yet
		118	933	None
Lenoir.....	1	80	80	Selective cutting complete
Martin.....	2	50	-----	Selective cutting complete
		9,600	9,650	None
McDowell.....	1	243	243	None—cut to 8" diameter
Montgomery.....	1	50	50	None as yet
Moore.....	4	1,500	-----	Planting and stand improvement
		1,165	-----	Planting and stand improvement
		728	-----	None as yet
		1,100	4,493	Selective cutting started
Nash.....	1	72	72	Improved cutting practices
Northampton.....	2	75	-----	Increased diameter limit
		75	150	None
Onslow.....	2	2,110	-----	Acquired for Marine Base
		6,000	8,110	Seed trees left
Pamlico.....	1	4,060	4,060	None
Pender.....	2	6,000	-----	Improved cutting practices
		1,156	7,156	None
Perquimans.....	1	100	100	Selective cutting started
Person.....	2	60	-----	Selective cutting complete
		80	140	Selective cutting started
Pitt.....	1	57,500	57,500	Improved cutting practices
Polk.....	2	1,000	-----	None as yet
		1,500	2,500	Improved cutting practices
Randolph.....	1	325	325	None—timber sold to 8'
Richmond.....	2	100	-----	Planting
		600	700	None
Robeson.....	3	180	-----	None
		140	-----	Selective cutting complete
		500	820	None
Rowan.....	1	75	75	Selective cutting planned
Rutherford.....	2	300	-----	None—sold to 8"
		187	487	None as yet
Scotland.....	1	60	60	None
Stanly.....	1	97	97	Selective cutting planned
Stokes.....	1	700	700	Selective cutting started
Transylvania.....	2	5,500	-----	None
		580	6,080	None
Wake.....	8	490	-----	Selective cutting planned
		270	-----	Improved forest practices planned
		125	-----	Selective cutting planned
		250	-----	Planting
		400	-----	None

TRACTS FOR WHICH FORESTRY ADVICE WAS FURNISHED—*Continued*

County	Number of Tracts	Acres by Tracts	Acreage by Counties	Results
Wake— <i>Continued</i>		300	-----	None as yet
		50	-----	14" diameter limit
		50	1,935	None as yet
Warren-----	3	795	-----	None
		440	-----	None as yet
		50	1,285	Better forest practices
Wayne-----	1	1,000	1,000	Selective cutting underway
Yancey-----	1	200	200	Better forest practices
TOTAL-----	120		333,993	

from the University of North Carolina near Chapel Hill for the production of tree seedlings and many other plants, shrubs, perennial herbs, etc., which can be used in their erosion control projects. The Tennessee Valley Authority also distributes tree seedlings in the mountain counties drained by the Tennessee river grown in the nursery at Clinton, Tennessee. The Forestry School at State College, Raleigh, and the Log Cabin Association at Sylva both have small forest tree nurseries for planting up land under their charge, but they occasionally distribute any surplus they may have. There are no commercial nurseries which specialize on growing forest tree seedlings and few that grow any great variety of native trees for shade or ornamental use.

*Clayton Nursery:* This nursery located near Clayton in Johnston County, thirteen miles from Raleigh, has continued under the same supervision as heretofore. However, with the closing of the CCC side-camp on the property, new arrangements had to be made for labor. In the Spring of 1942 three young men, formerly CCC enrollees, were employed on a monthly basis to assist Moody Clemmons, the nurseryman, and negro women from Clayton were employed to do the weeding. Since the War will no doubt greatly decrease the demand for seedlings, it is planned to cut down production to 50% of capacity; it is therefore felt that the present arrangement will continue to prove satisfactory until full production is resumed.

The crop of tree seedlings in the winter of 1940-41 was the largest yet produced but owing to a very severe wind, hail and rain storm in May 1941, the production of that year was cut at least in half, many beds having to be plowed up as the few seedlings left would not pay for the weeding. The lack of water also contributed to the crop failure, and although continual efforts were made to secure a new water supply through the CCC, it was not until late in the Spring of 1942 that this new supply became available. A small stream on the eastern boundary of the Winston addition was found to provide enough water, so 3.8 acres of land on the further side of the stream was purchased by the State from Willie L. Bagley at a cost of \$25.00 per acre. A small dam was built, making a pond some 3,120 feet from the surface reservoir in the nursery. The CCC supplied asbestos cement pipe for this line, which was laid under the supervision of the Johns Manville Corporation, which supplied the pipe. The CCC purchased a pump, and an engine from an



## DISTRIBUTION OF FOREST TREE SEEDLINGS BY SPECIES

Species	1938-39	1939-40	1940-41	1941-42
Loblolly Pine.....	1,194,675	856,425	1,925,540	1,015,975
Short Leaf Pine.....	314,600	261,200	400,150	155,425
Longleaf Pine.....	414,675	512,050	714,090	187,350
Slash Pine.....	126,050	27,825	167,080	187,000
Black Locust.....	180,625	70,885	176,380	48,200
Tulip Poplar.....	32,451	64,075	81,700	34,500
Black Walnut.....	29,614	24,179	7,500	500
Miscellaneous.....	45,525	15,750	37,220	1,500
Cypress.....		106,390	14,750	2,000
Cedar (Red).....	7,445	149,330	29,020	80,250
White Pine.....		431,433	316,550	119,500
<b>TOTAL.....</b>	<b>2,345,500</b>	<b>2,519,542</b>	<b>3,869,980</b>	<b>1,832,200</b>

DISTRIBUTION OF FOREST TREE SEEDLINGS BY CLASS  
OF COOPERATORS

Class of Coöperators	Biennium 1940-1942		Total 1926-1942	
	Number of Coöperators	Number of Trees	Number of Coöperators	Number of Trees
Farmers.....	1,224	3,865,000	3,172	8,970,135
Companies.....	12	900,530	73	2,315,794
Schools.....	12	131,000	276	1,166,469
State.....	11	470,000	68	113,094
Boy Scouts.....			30	14,680
4-H Clubs.....			2,476	157,623
Municipalities.....	5	50,000	12	196,674
Soil Conservation Service.....	1	80,000	2	3,697,040
Others.....	7	37,000	35	1,383,486
U. S. Forest Service.....	2	168,650	5	1,079,040
<b>TOTALS.....</b>	<b>1,274</b>	<b>5,702,180</b>	<b>6,149</b>	<b>19,094,035</b>

old Chevrolet truck was installed after several efforts to run it on borrowed equipment. Then, shortly before the dissolution of the CCC, an engine was contributed through that organization, which has not yet been put to test since the Chevrolet engine has been doing satisfactory work.

In January 1942, the American Telephone and Telegraph Company was granted an underground cable right-of-way 16½ feet wide across the Winston tract for the line between Raleigh and Goldsboro. One dollar per rod for 212 rods was received by the State in payment for this easement. The cable was laid on May 6 some two or three feet below the surface with a specialized

plow designed for the purpose. This cable will be below any possible use of the land for cultivation and from the point of view of the public, has enormous advantage over a pole line since it cannot be seen.

One of the chief losses which the nursery will sustain by the going out of the CCC is the collection of tree seed. Heretofore practically all our pine, locust and yellow poplar seed has been collected in this State by CCC camps. For this reason no local people have been taught to collect or prepare the seed for market. Now, with technical help so scarce, it will be difficult to get seed collected locally on which full reliance can be placed. While there is in cold storage sufficient seed to grow next year's crop, it would be advisable, if possible, to collect some seed each Fall. One of the most pressing needs at this nursery now is a large shed for drying pine cones and this had been included in lost CCC projects for this nursery. It seems unlikely now that any shed can be constructed until after the war.

*Crab Creek Nursery:* This nursery was established in 1938 on the narrow bottomlands of Crab Creek between Hendersonville and Brevard because the site was specially adapted to the growth of white pine and so far the production has chiefly been of this species. Unlike the yellow pines, this one requires two seasons growth before it is large enough for forest planting, so any desired increase or reduction must be provided for two years in advance. For this reason the outbreak of the war has brought about a surplus which must be disposed of as three year stock. It has been shown that both yellow poplar and black locust grow very satisfactorily in this nursery, so it is planned to grow most of these species here, leaving the Clayton nursery for the production of the southern pines.

A much needed addition to this nursery was made possible through the enactment of Chapter 118 by the General Assembly of 1941 which gave this Department the power of eminent domain in the acquisition of land for public purposes. The claimants of the 93 acres which adjoined this nursery property on the west, the heirs of Joseph and Jane Hamilton, were unable to give a clear title and were also unable to agree among themselves as to the division of the purchase price. Therefore, shortly after the adjournment of the General Assembly, the consent of the Governor and Council of State was secured to proceed with the acquisition of this land under the new law. A fair bona fide offer was made which was not accepted by all the heirs. A panel jury of three disinterested citizens was appointed by the Court and their valuation was practically the same as the State had offered for the property. As neither party to the suit protested the jury award, the State settled for the land on that basis, or an average price of \$27.00 per acre. The title to the State was actually completed in May 1942. Part of the land was put into seed beds the past spring but a serious flood which broke over the bank of the creek May 20, caused by a rainfall of some ten inches in 24 hours, cut down the stand some 30 percent on those beds. Stream improvement carried on during the past summer, however, should go far to prevent a similar catastrophe in the future.

With the transfer of P. A. Griffiths from immediate supervision of this nursery to the Raleigh office, it became necessary to employ a responsible foreman in charge. Molton W. Hensley, who had for several years supervised the CCC boys on this nursery, was employed. The labor situation has given some concern. Previous to October 1941, most of the work had been



done by a crew of CCC enrollees from camps 10 or 15 miles away. During the work period from March 8 to August 23, 1941, that organization contributed some 650 man days of labor, lifting, grading and packing seedlings, preparing seed beds, sowing, mulching, stream bed improvement, installing water system and furnishing other necessary care to this nursery. The CCC also furnished 40 man days of supervision and truck service of 2,700 miles, bringing the men and returning them to camp. Fortunately in 1942, we were able to secure a number of white women from the surrounding farms, all of whom are familiar with work in their home gardens, and their services in weeding and other work have proved quite satisfactory.

#### *BLADEN LAKES STATE FOREST.*

Since the Bladen Lakes Land Use Area, which was acquired by the Soil Conservation Service under the Resettlement Administration Program as the Jones and Salters Lake Land Use Area has been leased to the State to be operated as a State forest on a long time program, it seems wise and appropriate to adopt the above title for this 35,000 acre forest. Situated in the northern part of Bladen County to the northeast of the Cape Fear river, one corner of the property bordering on that stream, this forest contains a large proportion of sub-marginal forest land. It also contains three natural lakes (Jones, Singletary and Salters) which are the property of the State. At both Jones and Singletary lakes there have been developed recreational areas which are referred to in the report on State Parks.

During the first year of this biennium construction by the CCC has been completed on the following buildings on this forest without cost to the State: a large warehouse, a towerman's cottage and an office building, all at what is known as the administrative center at Jones Lake. There was also constructed a Warden's house at Susie's Hill on the northern part of the area. Improvements were also made on the cottages occupied by the Area Forester and the Area Warden.

There has been considerable change of personnel employed on the Forest. L. H. Hobbs, Area Forester, resigned June 13, 1942, to take up work with a private concern. His place was immediately filled by the appointment of Frank J. Miller, a graduate of the State College Forestry School, who for the past several years has been employed by the U. S. Forest Service in the Middle West. Earlier in the Spring of 1942 Ernest Taylor, Chief Ranger, resigned to go into Defense activities, and Nash Tatum was employed in his place. In December 1941, W. H. Simmons was appointed Fire Guard to take the place of Ellery Pridgen, deceased, but Simmons soon resigned and Thos. C. Ellis was appointed in his place. The only reason we are able to keep these men against the much higher wages paid at the shipyards in Wilmington and around the army camps is that they personally prefer to work near home.

The removal and sale of lightwood stumps was inaugurated as a step toward removal of fire hazards. It has been going on throughout the biennium, the State clearing a small margin as stumpage value.

Partly as a consequence of the serious fires of 1941 and the much more wide-spread and devastating fires of 1942, the sale of pulpwood and saw timber from burned-over areas was inaugurated in December 1941, and has been pushed so far as labor and equipment would permit up to the present

time. After advertising for bids, a contract for 1,000 units (160 cu. ft.) of pulpwood was entered into with the Cape Fear Wood Corporation and our dealings with this firm have been very satisfactory. Since the price of pulpwood has greatly risen through the spring and summer, this company has allowed the State such increases over the contract price as were justified by the increase in the regular market. The attached tabulated statement shows receipts from the woods operation on the Bladen Lakes Area.

### FINANCIAL REPORT ON TIMBER OPERATIONS

Bladen Lakes State Forest

July 1, 1941—June 30, 1942

#### RECEIPTS

Total cords lightwood, 1,038.6 .....	\$1,766.16
Total units pulpwood, 831.8 .....	5,078.56
Total BF Logs (Doyle rule), 176,347 .....	1,532.22
Poles .....	79.08
Misc. Forest Product .....	176.06
<b>Total .....</b>	<b>\$8,632.08</b>

#### EXPENDITURES

Field overhead and Supervision* .....	\$2,064.67
Labor .....	4,457.56
Gas and Oil .....	563.52
Supplies and Materials .....	154.36
Equipment repairs .....	415.26
Depreciation on equipment purchased** .....	190.00
Depreciation on tools (Value \$300) .....	100.00
	<b>\$7,945.37</b>
<b>Balance .....</b>	<b>\$ 686.71</b>

The Forest Planting program on the Bladen Lakes State Forest was continued during the spring of 1941. Some 307,000 seedlings from the Clayton nursery, most of which were surplus stock, were planted under the supervision of the area Forester. However, the lateness of the season necessitated by waiting for surplus stock unfortunately reduced the percentage of survival. Plans were made for planting 200,000 longleaf pine seedlings on the area in 1942, but CCC labor was not available. The nearby camp at White Lake was short-handed and busy trying to complete important fire control projects.

There has been pressing need for a better and more adequate water supply at the administrative center. In October 1941, the services of M. G. Mundorff, Geologist of the U. S. Geological Survey, assigned to this Department, were secured and he made a study of the situation. His conclusion was that by going down some 200 to 250 feet, the same strata which supplies excellent

\* Includes Area Forester's time—50% total time  
 Ass't State Foresters—20% 4 months  
 Raleigh Stenographer—20% total time  
 Associate Forester—10% 3 months

\*\* The pick-up owned by State. This does not include depreciation on trucks left on area by the Federal Government 3½ years ago which have been largely used.



water for the town of Elizabethtown would be reached and probably as good water secured. It was estimated that this would cost from \$700 to \$900. Since the funds were not available, nothing further was done and there seems little chance of carrying out Mr. Mundorff's recommendations until necessary pipe can be secured.

No conclusive action has been taken by the Federal Government on the acceptance of the five tracts of land acquired by the State under Chapter 228, Public Laws 1937, for inclusion in this area. While the Government recognizes the State's title and has accepted the options, it was felt advisable to clear up certain minor points by further Court proceedings. It seems that title to some other tracts are being settled by Federal condemnation and payment for the five State tracts will not be made until all payments for remaining land can be made at the same time.

### EDUCATION.

Cooperation with the Division of Vocational Agricultural Education in carrying some forestry to the teachers and pupils of the 400 white and negro Vocational Agricultural Schools of the State has been continued on a small scale. Several of the schools within an hour's drive of Crab Creek Nursery were becoming much interested in planting and thinning programs when defense and war brought about faculty changes.

In connection with this work, an offer of 50 pine seedlings for planting during Forest Week was made in March 1942, to both the negro and the white Vocational Agricultural Schools. Fifty-one of these Schools took advantage of this offer. For lack of personnel we have been unable to follow up this beginning with visits to the schools, as should be done.

Following a lecture in Wilson by Dr. H. N. Wheeler, the County Superintendent of Schools K. R. Curtis, started a program calling for a School Forest for each of the seven Vocational Schools in his County. In November 1941 he was handed the deed for his first School Forest. So far three such forests have been secured as follows:

*Saratoga High School Forest:* Ten acre tract one mile from school on hard surface, mostly immature, mixed forest of loblolly, sweet gum and other hardwoods. Forest donated to the County School Board by W. N. Harrell and to be known as the Applewhite Forest. Fire lane constructed and some improvement cutting done.

*Lee Woodard School Forest—Black Creek:* Ten acre field on the Lee Woodard farm donated by Mr. Woodard. Two acres have been planted with long-leaf and loblolly.

*Stantonsburg School Forest:* Two miles from the school, one-third mile off the road on bank of Contentnea Creek. Tract severely burned but still a number of small pines living. A number of species of hardwoods are found along creek bank. The donor, W. R. Rogers, in process of completing gift.

### REPORTS.

No publications have been printed during the biennium other than the Forestry Chapter in the last Biennial Report. However, the State Forester continued his assistance in the publication of the mimeographed report "North Carolina Gardens" until March 1942, when its publication was suspended on account of scarcity of paper and help. A special report was made

and presented to the January 1942 meeting of the Board entitled "A Ten-Year Master Forestry Program." This program, prepared by Wm. L. Beasley, Jr., with the help of the several branches of the Forestry Division, recognizes the need for such a long time program in the following introductory paragraph: "It should be thoroughly understood that any program which is proposed to be effected in a certain number of years, is subject to revision as events in the course of time will indicate. It also should be realized that a public agency such as the North Carolina Forest Service cannot be sure that funds will be provided in accordance with the plans. Indeed, it is quite probable that the lack of funds will be the limiting factor in effecting the proposal. Nevertheless, these facts do not detract from the desirability of a carefully planned long range program. The need for such a program of a comprehensive and properly integrated nature has long been felt. We present this program for the Division of Forestry as a goal toward which we may unhesitatingly strive."

During the last two months of 1941, F. H. Claridge prepared a management plan for the Bladen Lakes State Forest, which was turned over to the Board of Conservation and Development. Although not formally approved, it is now used as a guide for the administration of that area.

There is still a more than State-wide demand from teachers, club-women and other citizens and visitors to our State for our former publication "Common Forest Trees of North Carolina," which has been out of print for a number of years. It is now planned to revise and enlarge this popular handbook so that it can again be made available for instruction information in our schools, colleges and homes.

#### LEGISLATION.

The General Assembly for 1941 enacted several Laws touching the interests and responsibilities of the Division of Forestry.

*Chapter 118* allows the Department of Conservation and Development "to acquire by condemnation such areas of land in different sections of the State as may, in the opinion of the Department of Conservation and Development be necessary for the purpose of establishing and/or developing State Forests, State Parks and other areas and developments essential to the effective operation of the State Forestry and State Park activities with which the Department has been or may be entrusted." Unfortunately, a proviso was inserted which prevented the application of this Act to one county in which the Department was particularly anxious to acquire land in order to complete and open for use one of its outstanding State Parks.

*Chapter 195* appropriates the necessary \$8,000.00 to pay for the required relinquishment of the fifteen-year-old lease on the road running through Mount Mitchell State Park.

*Chapter 340:* This Act appropriates \$10,000 to be used by the Department in "repairing, reconstructing or building a spillway at the mouth of Waccamaw River in Columbus County." A dam had formerly been constructed at this place, which is where Waccamaw Lake empties into and forms the beginning of Waccamaw River. This old spillway had been out of repair for a number of years and the new dam was needed. The preamble to this Bill states the need for this spillway as follows:



"WHEREAS, Waccamaw Lake in Columbus County is by legislative enactment a unit of the State Park system, under control and supervision of the Department of Conservation and Development, and is open to and used by the public for recreation; and

WHEREAS, it is desirable and necessary to maintain a reasonable constant water level so that the recreational advantages of Waccamaw Lake may be fully enjoyed by the people of the State, and in order to maintain a constant water level it is necessary to repair or reconstruct the spillway at the mouth of Waccamaw River."

*Chapter 253:* An Act for the Preservation and Conservation of Wild Plants: This prohibits the digging up, pulling up or taking from the land of another or from any public domain, the whole or any part of any trailing arbutus, American holly, white pine, red cedar, hemlock or other coniferous trees, or any flowering dogwood, mountain laurel, rhododendron, ground pine, Christmas greens, Judas tree, leucothea, or azalea, without having in his possession a permit to dig up, pull up or take such plants, signed by the owner of such land or by his duly authorized agent." Unfortunately, 26 out of the 100 counties in the State are exempted from the operation of this measure. There is also no specific method of enforcing it other than the general law which requires the offended party himself to prosecute. However, this law is certainly a step in the right direction.

*Chapter 289:* This Act states that "the Dogwood is a radiantly beautiful flower which grows abundantly in all parts of this State" and then provides "That the dogwood be, and it is hereby, adopted as the official flower of the State of North Carolina."

*Chapter 258:* This Act amends the Forest Fire law by requiring that any party who shall willfully or negligently set on fire or cause to be set on fire any woods, lands or fields whatsoever, shall, upon conviction, be fined or imprisoned in the discretion of the Court. This only applies to counties in which the State Forest Service has a Forest Fire Control organization.

#### FEDERAL RELATIONS.

*Forest Acquisition:* Although this Department has little official responsibility or connection with the extension of National Forest areas, it and all the people of the State are interested in the permanent public ownership of lands too poor for agriculture and sub-marginal for profitable private operation as commercial forests. Although the Federal Government has reduced the appropriation for acquisition of forest lands during the past two years, some substantial gains have been made, a total of some 25,000 acres having been added, chiefly to the Nantahala National Forest and the Uwharrie Purchase Area. The following table shows the area of the several National Forests in North Carolina as of June 30, 1942:

Unit	Acquired by Purchase or Exchange (acres)	Transferred to Nat'l For- est by TVA or Veterans Admr. (acres)	Total U. S. land as of 6/3/42	Under ap- proved con- tract but not acquired (acres)	Total when contracts completed (acres)
Cherokee	327		327		327
Croatan	125,260		125,260	659	125,919
Nantahala	326,341	24,156	350,497	15,882	366,379
Pisgah	464,233	454	454,687	1,446	466,133
Uwharrie	29,158		29,158	7,145	36,303
TOTALS	945,319	24,610	969,929	25,132	995,061

*Forest Survey:* In addition to the two Forest Survey Releases, nos. 4 and 5, issued in January and April, 1940, the Forest Service released reports on the Piedmont and Mountain Regions of North Carolina, Releases Nos. 6 and 7. The former was received in November 1940 and the latter in April 1941. Forest Survey Release No. 8 "Distribution of Commercial Forest Trees in North Carolina" was issued in May 1941. Through the courtesy of the Appalachian Forest Experiment Station, which supervised this survey, the State Forester was requested to review the manuscript of these reports before publication and he was glad to have this opportunity. It is understood that a comprehensive compilation of these five reports, together with other data collected by the timber survey, will be published at a not too distant date by the Government under the title "North Carolina Forest Resources and Forest Industries." This would, no doubt, have been printed and distributed before now had not it been for the War. The manuscript already reviewed shows that it will be one of the most comprehensive reports on the timber resources of a single state yet issued by the Government.

*Soil Conservation Service:* The State Forester has continued his ex officio connection with the State Soil Conservation Committee. The establishment of Soil Conservation Districts has extended into the Mountain and Coastal Plain Regions by the creation of four additional Districts, as follows:

New River .....	423,000 acres	Alleghany and Ashe Counties
Pee Dee-Cape Fear .....	1,072,000 acres	Hoke, Scotland and Robeson Counties
Coastal Plain .....	1,227,000 acres	Martin, Greene, Edgecombe and Pitt Counties
Roanoke-Chowan .....	1,017,000 acres	Bertie, Hertford, and Northampton Counties

*Farm Security Administration:* In June 1941 the Regional Forester of the Forest Service informed this office that arrangements had been made to lend to the Farm Securities Administration a forester to help secure better management and sales practices on farm woodlands included in the FSA Tenant Purchase Program. For twelve months H. F. Wise, assisted from time to time by Roger D. Huff, the Forest Service man lent to this Department,



carried out a most constructive program of instruction and demonstration through training schools for FSA field personnel in the various parts of the State and through individual assistance and advice to borrowers. Unfortunately, the transfer of Wise and the withdrawal of the Federal allotment has caused the suspension of this program.

*Civilian Conservation Corps:* This biennium has witnessed the decline and closing of the Civilian Conservation Corps. One of the first, one of the most popular and one of the best agencies brought into being for the benefit of society was the Civilian Conservation Corps. For 9½ years, from March 1933 to June 30, 1942 this organization operated from camps located in all parts of the State. There have been S. C. S. camps, TVA camps, National Park Service camps, State Park camps, Biological Survey camps and U. S. Forest Service camps, as well as camps working on State and Private lands under the leadership of the Division of Forestry in this Department. The five CCC camps and the side-camp at Clayton continued to operate under the direction of this Division throughout the first year of the biennial period, though camp P-66 at Brevard was moved on September 8, 1940, to the Sandhills Wildlife area at Hoffman. This camp remained there, working largely on projects connected with the Wildlife Refuge until June 28, 1941, when it was closed and the enrollees divided up amongst other camps. Subsequently arrangements were made through the courtesy of the Soil Conservation Service to complete two unfinished projects from their camp at Sanford.

On July 1, 1941 a decided change in policy went into effect, which removed the administration of the State and Private forestry camps from the direct supervision of the State Forester where it had been since the beginning of the organization some eight years ago. The Supervisor of the Pisgah-Croatan National Forest is now in charge of these camps as well as those on the National Forests. On July 9, the rooms on the top floor of the Agricultural Annex were, therefore, evacuated and H. J. Pawek and B. W. Sipe moved to Asheville, assuming Civil Service rating. The State Forester still was held responsible for the designation of camp location and the selection of work projects to be undertaken on State and Private lands and he still had authority to call out camp crews for forest fire suppression. The procurement Office of the CCC which had been operating here in Raleigh in close cooperation with this Department since its establishment in 1933, first under F. H. Claridge and then under H. J. Pawek, was moved to Asheville at the same time where it was consolidated with that of the Pisgah National Forest. Camp P-73 at Bolton was taken over by the Army November 1, 1941, and moved to Fort Bragg.

With all of our young men going into the armed forces it seems inevitable that the CCC should decline since these men younger than the draft age are greatly needed in farm and other civil activities. It was, therefore, no surprise to learn on February 23 that the two remaining park camps would be taken from us in March. This was accomplished as scheduled. Not many days later we were informed that camps P-74 at Maple Hill and P-75 at Buffalo Cove would go out March 15. As a matter of fact, the Army took P-74 on March 7 and is using it on the New River area. This left only the White Lake camp S-68 under the supervision of this Department. It was very much hoped that this Camp could have remained since the side camp at the Clayton Nursery was part of it. However, the side camp was finally moved to White

Lake on May 2 and the full camp was taken away before the end of the month. A wooden tower in Brunswick County was left only partly built. There are also a number of steel towers already purchased for the Department by the CCC and delivered to the site ready for erection, which cannot now be built. All equipment at these camps which did not belong to the State has been turned over to the Army.

It is too soon to arrive at any just appraisal of the benefits received by the State and people of North Carolina through this program. Some day accomplishments will be listed, costs computed and results measured. At that day it will undoubtedly be found that of the three major objectives of the CCC, i.e. conservation of our natural resources, financial aid to indigent families, and training in skill and character of our young men; the last named has had the most far reaching results. And this is by no means belittling the great accomplishments in forwarding the conservation of our soils and forests.

We are indebted to the Regional Forester in Atlanta, under whose general supervision all forestry camps, both State and Federal, were operated, for the following valedictory summing up, slightly abbreviated:

. . . "During the nine-year period, CCC camps under the jurisdiction of the U. S. Forest Service and the State Forester advanced the cause of forest conservation in North Carolina by at least a generation, both on the Pisgah and Nantahala National Forests and on State and privately owned lands. A total of 4,900,000 man-days of work was done, of which about 60 per cent was on the National Forests.

"Highlights of the work accomplished in North Carolina include the following items:

"The CCC boys, in improving the physical facilities of the forests, built 2,688 miles of roads, 398 miles of trails, and 1,130 bridges. They constructed 519 buildings, 52 miles of fences, and 1,800 miles of telephone lines. To prevent erosion, they sloped 270,000 square yards of road banks, seeded and sodded 188,000 square yards, and planted 393,000 square yards of gullies.

"To aid in fire protection, they erected 85 lookout towers, cleared 1,200 miles of firebreaks, and spent 46,000 man-days fighting fires. Largely through the fire control improvements and facilities constructed by the CCC, it has been possible for the Division of Forestry of the North Carolina Department of Conservation and Development to provide fire control on millions of acres of private timber lands that otherwise would have continued to suffer severe damage annually. For sowing in forest nurseries, 37,670 bushels of pine cones and 16,000 pounds of hardwood seeds were collected. Nursery operation utilized 82,000 man-days of work. Over 3,500 acres of denuded lands were planted to make future forests and timber stand improvement work was done on 204,000 acres.

"Perhaps the greatest benefit rendered by the CCC in North Carolina was to the boys, largely recruited within the State, who lived and worked in the camps. They learned useful trades and habits of industry and self-reliance and developed strong and healthy bodies. Army officers find ex-CCC boys who enter the armed forces to be in much better than average physical trim and, as a result of CCC training in first aid and in such specialized skills as truck



and tractor driving and telephone maintenance, able in a short time to handle the mechanized equipment of modern warfare.

"When the boys go home they will be more useful citizens of their communities. They will be enthusiastic conservationists and may be counted on, through the years to come, to aid actively in protecting and wisely using North Carolina's natural resources."

## DIVISION OF GAME AND INLAND FISHERIES

The main objects of the Division have changed very little from those set forth in the last biennial report. They are listed, as follows, in order of importance:

- |                 |              |
|-----------------|--------------|
| 1. Conservation | 3. Education |
| 2. Protection   | 4. Research  |

### GAME

The administration of this Division of the Department of Conservation and Development is financed solely by hunting and fishing license revenue. The Division is facing a very serious problem from a financial angle. The people are beginning to realize that the Nation is in the midst of a global war, the outcome of which has not been decided. Gas and rubber rationing has not only seriously hampered our activities but will seriously curtail our financial returns and necessarily and eventually curtail our program.

In spite of unsettled economic conditions, hunting license revenue during the last fiscal year was the largest in the history of the Division. An explanation of the statement showing receipts and disbursements will probably be helpful.

The fiscal year ends July 1. While an increase in balances carried forward is shown, this is not a surplus but a revolving fund to take care of the months when practically no revenue is coming in.

With an order from the War Production Board stopping the manufacture of sporting ammunition on June 15, 1942, a serious crisis during the next biennium threatens.

Judging from the numerous reports coming from the field, small game seems to be definitely on the increase. With a definite drop off in hunting caused by the world war, all game should increase if properly protected. It is the duty of all conservationists left at home to see that game is protected, if for no other reason so that our men who return from the final victorious battle fields will see that our fields, forests and streams have not been denuded of game and fish during their absence. Those left at home have "a charge to keep."

With a definite curtailment of all travel and certain decrease in financial returns, it seemed mandatory that some of our operations be curtailed. Instead of continuing field operations in the farm game program, we are using three field men in the place of six and setting up three application and demonstration areas in this State, one in the mountain section, one in the Piedmont and one in the coastal area. The biologists will live on these areas and apply and demonstrate known methods of improving environment for small game.

The cooperative areas on U. S. Forest lands have been enlarged, this Division taking over the cooperative management and protection of the Pisgah National Game Refuge area containing an additional 100,000 acres.

Listed below are the cooperating areas of Western North Carolina:



<i>Areas</i>	<i>Location</i>	<i>Acreage</i>
<i>Nantahala Areas</i>		
Santeetlah Area—Graham County, W. of Robbinsville, N. C.....		37,168
Fires Creek Area—Clay County, N. of Hayesville, N. C. ....		13,720
Standing Indian Area—Macon County, S. of Franklin, N. C. ....		28,432
Wayah Bald Area—Macon County, W. of Franklin, N. C.....		11,284
Cliffside Lake—Macon County, W. of Highlands, N. C. ....		8
<i>Pisgah Areas</i>		
Sherwood Forest Area—Haywood County, S. of Waynesville, N. C. ....		30,875
Mt. Mitchell Area—Yancey and McDowell Counties, W. of Marion, N. C.		25,200
Daniel Boone Area—Avery, Burke and Caldwell Counties, N. W. of Morganton, N. C. ....		46,500
Pisgah Preserve—Henderson, Haywood and Transylvania Counties....		100,000
Total .....		293,187

While in the midst of development of the Sandhills area at Hoffman, we are informed that this will be taken over by the Army for an additional army camp. Construction of 13 lakes in the Hoffman area has been almost completed. Public fishing was permitted in three of these lakes during 1941 and in four during 1942. This area has previously been restocked with deer and the herd has increased nicely. It is the hope and belief that under Army administration even better protection will be furnished. The protection alone furnished on the Bragg area has resulted in about the finest deer herd in North Carolina and has supplied the surrounding section with excellent deer hunting.

The Holly Shelter area in Pender County has been developed with the aid of Pittman-Robertson funds. While a part of this natural deer section is maintained as an inviolate refuge, other sections of the area have furnished the sportsmen of the State an opportunity to hunt on State-owned lands for a nominal fee and no serious damage has been done to the deer herd. Arthur Grahame, a contributor to *Outdoor Life*, says "Game management experience has proved that when male game animals are polygamous, and females and young males are protected by strictly enforced laws, even a heavy annual kill of mature males does not prevent the game population from doubling every ten years."

During 1941 and 1942 something like a thousand hunters will have taken part in the State-managed hunts on the Holly Shelter Pocosin.

The Division has secured in fee simple an additional area of 24,000 acres in this vicinity, making a total of 74,000 acres of State-owned and managed refuge and public hunting lands.

The propagation of quail and wild turkeys has continued at the Fayetteville and Pine Forest Game Farms. During the biennium, 7,211 quail and 4,430 turkeys have been reared and released in depleted areas of the State or planted on protected lands. Of these, 3,441 quail and 2,632 wild turkeys were reared during the first year of the biennium and 3,770 quail and 1,792 turkeys the second year. During the past two years, some quail have been released in

virtually every county in the State; and a great many turkeys where suitable territory could be found.

In research, J. W. Kistler has conducted tests and practices on the Buffalo Farm in Wake County. This Pittman-Robertson project is entering its third year of operation. A great many of the practical practices will be put into use on the three new areas being set up in the State at this time.

When one realizes that the fur crop in North Carolina amounts to a million and a quarter dollars in value annually, he will appreciate the necessity for the Division's fur-bearers project which is being carried on under the leadership of Joe C. Rabb. The object of this project is primarily to educate the trapper in preparing his pelts for market, give the Division ample data which will enable it to set open dates for trapping more intelligently, and promote the conservation of fur-bearing animals.

The protective angle of the Division is perhaps the most important of all. It is our hope that this can and will be improved. We hope that the county protectors will be looked upon as the friend and not the enemy of the real sportsman, showing him and aiding him in finding the best places to hunt and fish.

Those who observe the hunting and fishing regulations need expect nothing but hearty coöperation from our field forces.

This report would be incomplete without calling attention to the Division's setup at Lake Mattamuskeet. With fifty-odd thousand acres in the Federal refuge, five thousand acres are set apart as a shooting area for the public. The Division furnishes law enforcement officers for the protection of this area and also furnishes guides. However, the guides are paid by hunters. It is thought by a great many sportsmen that this is one of the finest duck and goose shooting sections on the Atlantic Seaboard.

Prosecutions totaling 1,973 have been conducted during the biennium on charges of violations of the hunting laws. Fines amounting to \$10,447.66 have been assessed by the courts against the offenders, and costs of court have amounted to \$11,782.22 in these cases.

Below are tabulated prosecution records of the protector force for each of the two years of the biennium:

#### GAME LAW PROSECUTIONS

##### July 1, 1940 to June 30, 1941

Number of cases.....	1,041
Amount of Fines.....	\$5,251.31
Amount of Costs.....	6,483.06

##### July 1, 1941 to June 30, 1942

Number of cases.....	932
Amount of Fines.....	\$5,196.35
Amount of Costs.....	5,299.16



## HUNTING LICENSE RECEIPTS, 1940-1941

Guides, 433; State Trappers, 513; County Trappers, 1,424

County	Non-Resident	State	County	Combination	Trapper	Receipts
Alamance.....	2	1,372	711	241	14	\$ 4,244.00
Alexander.....	4	134	258	38	3	709.00
Alleghany.....	1	34	173	71	9	488.00
Anson.....		118	941	76	18	1,444.00
Ashe.....		36	329	8	1	427.00
Avery.....	11	114	248	47	7	798.00
Beaufort.....	75	1,002	1,082	135	50	4,801.00
Bertie.....	13	248	1,580	247	46	3,110.00
Bladen.....	18	415	1,149	149		2,706.00
Brunswick.....	14	209	948	33	9	1,708.00
Buncombe.....	11	1,518	1,758	782	12	7,333.00
Burke.....		411	539	447	8	2,720.00
Cabarrus.....		1,282	572	455	15	4,540.00
Caldwell.....		452	693	278	7	2,451.00
Camden, See Pasquotank						
Carteret.....	71	360	712	30	21	2,769.00
Caswell.....	11	220	471	15	18	1,158.00
Catawba.....		1,052	621	455	13	4,124.00
Chatham.....	82	446	659	71	19	3,055.00
Cherokee.....	1	193	288	95	2	978.00
Chowan.....	11	189	237	46	29	994.00
Clay.....		28	106	19		219.00
Cleveland.....		534	650	256	9	2,509.00
Columbus.....	59	532	1,625	289	2	4,492.00
Craven.....	29	820	1,351	134	3	3,837.00
Cumberland.....	5	816	945	251	16	3,438.00
Currituck.....	763	257	597	43	157	13,981.00
Dare.....	65	162	357	42	79	2,009.00
Davidson.....	11	1,009	1,100	117	14	3,668.00
Davie.....		304	476	31	12	1,203.00
Duplin.....	10	752	1,111	227		3,446.00
Durham.....	4	1,838	306	636	25	6,011.00
Edgecombe.....	21	719	1,167	487	70	4,531.00
Forsyth.....	4	2,753	888	459	19	7,884.00
Franklin.....		223	629	67	20	1,317.00
Gaston.....	1	1,436	630	203	11	4,156.00
Gates.....	40	119	500	46	54	1,589.00
Graham.....	19	68	335	18		810.00
Granville.....	4	250	736	81	17	1,579.00
Greene.....		216	422	223		1,523.00
Guilford.....	29	2,800	675	564	13	8,434.00
Halifax.....	41	646	1,300	270	26	4,081.00
Harnett.....	10	638	594	421	8	3,304.00
Haywood.....	2	452	796	195	5	2,326.00
Henderson.....	10	263	615	160	14	1,805.00
Hertford.....	45	208	616	94	19	2,031.00
Hoke.....	4	217	487	44		1,138.00
Hyde.....	392	237	736	58	81	7,850.00
Iredell.....	2	744	1,686	179	11	3,772.00
Jackson.....		112	183	101	1	712.00
Johnston.....		419	1,804	322	1	3,611.00
Jones.....		226	551	25	3	1,111.00
Lee.....		378	350	122	14	1,507.00
Lenoir.....	6	602	710	538	29	3,680.00
Lincoln.....		143	81	97	7	679.00
McDowell.....		413	643	151	3	929.00

HUNTING LICENSE RECEIPTS, 1940-41 — *Continued*

County	Non-Resident	State	County	Combination	Trapper	Receipts
Macon.....		72	564	58	9	900.00
Madison.....	2	79	346	17	8	\$ 602.00
Martin.....	17	337	912	270	71	2,817.00
Mecklenburg.....	7	2,246	1,483	571	26	7,853.00
Mitchell.....		138	258	80	6	786.00
Montgomery.....	2	454	552	81	10	1,761.00
Moore.....	46	607	417	110	4	2,682.00
Nash.....	3	645	1,235	263	58	3,493.00
New Hanover.....	5	1,174	297	236	12	3,457.00
Northampton.....	4	133	890	89	27	1,537.00
Onslow.....	27	288	714	78	22	2,034.00
Orange.....		394	516	93	13	1,616.00
Pamlico.....	24	229	445	10	41	1,405.00
Pasquotank—Camden.....	75	593	393	86	68	3,135.00
Pender.....	7	288	1,050	82		1,987.00
Perquimans.....	9	90	250	5	12	623.00
Person.....	5	229	493	32	19	1,168.00
Pitt.....	4	865	1,840	446	124	5,242.00
Polk.....	1	79	593	105	9	1,103.00
Randolph.....	51	943	742	215	12	4,091.00
Richmond.....		693	911	228	19	3,022.00
Robeson.....	44	874	1,860	318		5,267.00
Rockingham.....	1	690	762	110	10	2,516.00
Rowan.....		1,625	1,161	225	16	5,128.00
Rutherford.....	1	381	1,268	276	17	2,912.00
Sampson.....	13	553	1,679	151	1	3,436.00
Scotland.....	6	250	638	47	13	1,400.00
Stanly.....	2	683	223	157	8	2,112.00
Stokes.....	1	132	285	12	9	621.00
Surry.....	3	490	564	77	23	1,870.00
Swain.....	2	72	242	35		521.00
Transylvania.....	15	97	254	54		835.00
Tyrrell.....	18	126	253	10	40	959.00
Union.....	1	356	1,249	82	27	2,283.00
Vance.....	4	445	817	116	22	2,171.00
Wake.....	11	1,613	1,983	661	42	7,452.00
Warren.....	8	217	1,063	44	31	1,816.00
Washington.....	28	367	510	51	29	1,903.00
Watauga.....		66	239	46	4	517.00
Wayne.....	7	563	1,122	333		3,352.00
Wilkes.....		317	596	83	15	1,512.00
Wilson.....	2	639	1,147	353	6	3,532.00
Yadkin.....		235	174	15	7	706.00
Yancey.....	3	177	196	75		820.00
Miscellaneous Sales.....	70	96	76	65	3	1,565.00
TOTAL.....	2,430	52,779	72,989	17,240	1,937	\$273,249.00
Mattamuskeet Lake.....						4,158.00
Fur Dealers' Licenses and Permits.....						3,193.00
Bush Blind Licenses and Shooting Point Licenses.....						838.00
						\$281,438.00
Less Proportionate Part of Combination Licenses transferred to Inland Fisheries.....						17,245.00
GRAND TOTAL.....						\$264,193.00



# HUNTING LICENSE RECEIPTS, 1941-1942

Guides, 480; State Trappers, 782; County Trappers, 1,620

County	Non-Resident	State	County	Combination	Trapper	Receipts
Alamance.....	2	1,517	688	260	32	\$ 4,614.00
Alexander.....		150	218	59	5	709.00
Alleghany.....	7	38	191	81	18	655.00
Anson.....		120	641	80	12	1,149.00
Ashe.....	1	38	338	14	2	475.00
Avery.....	6	157	235	58	6	826.00
Beaufort.....	77	1,141	1,228	174	50	5,364.00
Bertie.....	17	294	1,930	300	62	3,803.00
Bladen.....	21	517	1,149	157		2,979.00
Brunswick.....	2	305	1,028	45	11	1,830.00
Buncombe.....	75	1,780	1,625	874	25	8,993.00
Burke.....	2	549	614	513	10	3,304.00
Cabarrus.....		1,309	495	555	14	4,815.00
Caldwell.....	2	605	813	390	18	3,272.00
Camden.....	59	162	181	8	45	1,525.00
Carteret.....	65	414	839	44	32	2,926.00
Caswell.....	20	244	476	18	14	1,348.00
Catawba.....	2	1,137	574	599	15	4,714.00
Chatham.....	58	494	592	79	17	2,736.00
Cherokee.....	6	275	452	203	3	1,707.00
Chowan.....	13	214	231	63	30	1,120.00
Clay.....		91	299	27	2	566.00
Cleveland.....	3	671	667	332	16	3,091.00
Columbus.....	39	725	1,554	327		4,600.00
Craven.....	18	1,007	1,402	195	59	4,431.00
Cumberland.....	7	1,094	1,025	315	16	4,296.00
Currituck.....	883	366	609	98	144	16,244.00
Dare.....	93	212	268	53	91	2,545.00
Davidson.....	6	1,135	1,051	138	12	3,856.00
Davie.....		306	468	29	19	1,211.00
Duplin.....	7	763	1,087	245		3,453.00
Durham.....	5	1,762	267	698	33	6,046.00
Edgecombe.....	16	866	1,421	550	95	5,257.00
Forsyth.....	2	2,877	801	558	31	8,345.00
Franklin.....		281	689	92	39	1,616.00
Gaston.....		1,612	607	273	19	4,703.00
Gates.....	49	163	584	65	41	1,934.00
Graham.....	14	103	434	49		1,002.00
Granville.....	5	273	773	79	20	1,678.00
Greene.....	3	293	469	262		1,886.00
Guilford.....	32	2,919	724	730	23	9,293.00
Halifax.....	41	801	1,525	355	44	4,925.00
Harnett.....	7	736	664	464	10	3,661.00
Haywood.....	5	494	844	285	6	2,774.00
Henderson.....	96	353	657	140	20	3,350.00
Hertford.....	52	278	750	113	38	2,509.00
Hoke.....	7	210	574	65		1,314.00
Hyde.....	403	266	720	45	74	8,099.00
Iredell.....		796	1,570	247	20	3,953.00
Jackson.....	1	111	202	177	9	988.00
Johnston.....		483	1,881	378	52	4,092.00
Jones.....	4	297	496	54	5	1,352.00
Lee.....	1	488	402	160	14	1,913.00
Lenoir.....	4	733	731	634	38	4,243.00
Lincoln.....		171	85	112	8	787.00
McDowell.....	3	543	667	193	6	2,390.00

HUNTING LICENSE RECEIPTS, 1941-1942 — *Continued*

County	Non-Resident	State	County	Combination	Trapper	Receipts
Macon.....		79	605	73	9	\$ 1,000.00
Madison.....	27	121	476	29	15	1,240.00
Martin.....	4	450	1,116	372	62	3,340.00
Mecklenburg.....	7	2,265	1,576	706	22	8,386.00
Mitchell.....	4	151	360	90	7	1,006.00
Montgomery.....	1	414	423	96	10	1,581.00
Moore.....	43	645	331	116	9	2,707.00
Nash.....		717	1,358	235	67	3,803.00
New Hanover.....	10	1,561	319	239	18	4,496.00
Northampton.....	8	135	875	92	26	1,593.00
Onslow.....	5	596	839	164	22	2,653.00
Orange.....	5	375	563	85	15	1,682.00
Pamlico.....	37	247	508	9	30	1,673.00
Pasquotank.....	50	662	368	89	54	2,846.00
Pender.....	5	429	1,182	120		2,485.00
Perquimans.....	9	108	293	6	12	701.00
Person.....	4	299	542	43	18	1,373.00
Pitt.....	4	1,090	1,944	585	116	6,211.00
Polk.....	5	116	592	122	9	1,233.00
Randolph.....	40	961	693	219	13	3,925.00
Richmond.....	1	668	798	222	26	2,874.00
Robeson.....	28	1,001	1,921	380		5,498.00
Rockingham.....	3	734	953	128	31	3,028.00
Rowan.....		1,583	1,093	250	21	5,063.00
Rutherford.....	5	422	1,231	378	28	3,351.00
Sampson.....	22	703	1,713	211	3	4,096.00
Scotland.....	12	266	702	59	17	1,631.00
Stanly.....		637	171	162	10	1,958.00
Stokes.....	1	168	461	22	17	919.00
Surry.....	9	531	569	111	40	2,194.00
Swain.....	1	112	326	50	2	719.00
Transylvania.....	120	213	333	94		2,916.00
Tyrrell.....	38	161	239	13	22	1,313.00
Union.....		330	926	115	25	1,989.00
Vance.....		555	883	125	17	2,415.00
Wake.....	14	1,734	1,844	754	46	7,901.00
Warren.....	5	238	1,173	42	32	1,924.00
Washington.....	23	475	504	97	27	2,169.00
Watauga.....		94	286	65	1	671.00
Wayne.....	2	627	1,081	401		3,568.00
Wilkes.....		409	706	109	39	1,934.00
Wilson.....	1	687	1,163	405	9	3,794.00
Yadkin.....		250	236	14	10	803.00
Yancey.....	4	221	278	106	4	1,106.00
Miscellaneous.....	81	75	69	70	6	1,674.00
TOTAL.....	2,879	60,104	76,177	21,034	2,392	\$310,759.00
Mattamuskeet Lake.....						3,034.50
Western Refuges.....						612.50
Fur Dealers Licenses, Permits, Bush Blind Licenses, Shooting Point Licenses.....						4,600.25
						\$319,006.25
Less Proportionate Part of Combination Licenses Transferred to Inland Fisheries.....						21,028.00
GRAND TOTAL.....						\$297,978.25



## GAME BIRD PROPAGATING LICENSES

July 1, 1940 to June 30, 1941

Elgin F. Hartman	Winston-Salem
C. B. Williams	Fayetteville
Dr. H. H. Fries	Tillery
L. H. Coley	Salisbury
W. E. Knox	Charlotte
F. B. Atkinson	Charlotte
M. E. Cauble	Salisbury
Earl L. Robards	Charlotte
Harold Franklin Keels	Greensboro
Burton H. Smith	Charlotte
Conley Paige	Kannapolis
Baxter Carter	Denton
H. M. Thigpen	Saratoga
Thurmond Chatham	Winston-Salem
Martin McKinnen	Maxton
Dr. Z. F. Long	Rockingham
James M. Workman	Gastonia
P. I. Henderson	Charlotte
Graham Weant	Salisbury
J. B. Burrage	Concord
Montvale Game Farm	Oakland
Mrs. Harry A. Squires	Danville, Va.
Thurman Briggs	Lexington
Floyd E. Gray	Greensboro
Bob White Quail Farm, F. S. Gallant	Charlotte
J. L. Black	Charlotte
Raymond Griffin	Monroe
Mrs. P. I. Henderson	Charlotte
L. M. Jones	Morehead City
J. M. Workman	Gastonia
J. Hal Lassiter	Greensboro
R. F. Morris	Winston-Salem
G. I. Hanes	Winston-Salem
R. D. Davis	Winston-Salem
Frank Misenheimer	Concord
J. C. James	Elizabeth City
P. J. Baugh	Charlotte
Fred P. Latham	Belhaven
J. E. Anderson	Salisbury
C. D. Barbee, Jr.	Burlington
B. C. Lineberger, Jr., and A. J. Smith	Lincolnton
Albert G. Wilkinson	Durham
Alonzo Potts	Colfax
R. H. Balenger	Greensboro
Charles M. Griffith	Winston-Salem
Robert Loew Barbee	Durham
Paul R. Jones	Thomasville
R. C. Allen	Durham

J. B. McCall	Gastonia
Greensboro Country Park (Complimentary)	Greensboro
H. F. Keels	Greensboro
S. O. Stone, Jr.	Concord
W. E. Stout	Wallace
D. P. Gwaltney	Devotion
R. L. Whitaker, Jr.	Salisbury
Burton H. Smith	Charlotte
J. W. Davis	Mocksville
Thomas Lauder	Tillery
R. H. George	Swanquarter
Clyde Mathias	Currituck
Thurmand Chatham	Elkin
E. A. Sutton	La Grange
R. H. Barringer	Greensboro
W. D. English	High Point
Joe L. Orr	Charlotte
R. S. Gidney	Shelby
Dr. J. B. Powell, Jr.	Ahoskie
Frank W. Fuller	Salisbury
J. S. McInnes	Raleigh
Dalton O'Neal	Durham
D. W. Johnson	Burlington
J. B. Tapscott	Graham
C. C. Lemmons	Charlotte
H. E. Holshouser	Salisbury
L. W. Nelson	Hendersonville
E. J. Joyner	Winston-Salem
S. W. Enloe, Jr.	Ahoskie
A. G. Gordon	Winston-Salem
Mrs. Tennie Fox	Siler City
Julian T. Bishop	Carthage
Robert E. Tunnell	Swanquarter
C. P. Barker, Jr.	Pleasant Garden
Miss Nora Elliott	Lawndale
Mrs. J. P. McDowell	Tarboro
O. L. Ballance	Fremont
Conley Paige	Kannapolis
Currituck Shooting Club	Popar Branch
S. G. Hunter	Julian
Tom Lupton	Whortonsville
H. F. Hauser	Winston-Salem
B. B. Sisk	Charlotte
Jefferson Country Club	Greensboro
Dr. Joseph P. Knapp	Mackey Island
Dwight Coble	Julian
Eugene Bolick	Icard
J. J. Haggerty, Jr.	Rocky Mount
Ray Adams	Corolla
Jethro Almond	Albemarle



## GAME BIRD PROPAGATING LICENSES

July 1, 1941 to June 30, 1942

K. E. Bryson	Hamlet
R. B. Havens, Jr.	Tarboro
Jonas W. Edwards	Pinetops
J. B. Yates	Hillsboro
Mrs. H. N. Cherry	Tarboro
Charles Bolick	China Grove
Ervin Frye	Asheboro
E. R. Wellmon	Shelby
W. S. Paschal	Greensboro
Hayes Patterson	Concord
Ray Brown	Newton
C. W. Lee	Advance
J. B. Pearce	Shelby
J. W. Hinton	Statesville
R. S. Gidney	Shelby
Mrs. H. A. Squires	Danville, Va.
W. A. Julian	Gastonia
John W. Davis	Charlotte
Dr. J. R. Lowery	Salisbury
J. E. Anderson	Salisbury
Bob White Quail Farm	Charlotte
J. H. Rascoe	Burlington
Austin Williams	Maiden
T. A. Roddy	Forest City
John C. McClain	Charlotte
W. E. Stout	Wallace
Ed Hayes	Charlotte
C. W. Lee	Advance
Harold F. Keels	Greensboro
Fred P. Latham	Belhaven
Currituck Shooting Club	Poplar Branch
Joseph P. Knapp	Knotts Island
S. F. Garrett	Greenville
R. E. Robinson	Ayden
Thurmond Chatham	Elkin
Mrs. P. I. Henderson	Charlotte
Charles M. Griffith	Winston-Salem
R. L. Whitaker, Jr.	Salisbury
H. P. Leak	Greensboro
R. H. George	Swanquarter
C. P. Barker, Jr.	Pleasant Garden
Mrs. H. N. Cherry	Tarboro
C. C. Lemmons	Charlotte
Clyde Mathias	Currituck
S. O. Stone, Jr.	Concord
Tom Lupton	Whortonsville
Oscar L. Ballance	Fremont
J. S. McInnis	Raleigh

R. D. Davis	Winston-Salem
R. J. Stafford	Kernersville
Hayes Patterson	Concord
C. R. Turner	Charlotte
Mrs. Tennie Fox	Siler City
Robert Lowe Barbee	Durham
S. G. Hunter	Julian
P. J. Baugh	Charlotte
R. M. Davis	Walkertown
Joe L. Orr	Charlotte
Thomas Lauder	Tillery
Julian T. Bishop	Southern Pines
A. G. Gordon	Winston-Salem
Luther W. Nelson	Hendersonville
Mrs. J. P. McDowell	Tarboro
Burton H. Smith	Charlotte
Conley Paige	Kannapolis
Eugene Bolick	Icard
A. B. Gilliam	Hertford
Jethro Almond	Albemarle
C. S. Adkins	Hickory

## PERMITS TO KEEP GAME ANIMALS IN CAPTIVITY

July 1, 1940 to June 30, 1941

M. M. Poole	Jackson Springs, N. C.
George E. Howell	Lynchburg, Va.
D. K. Stroud	Route 2, Pink Hill
J. L. Hodge	Route 5, Salisbury
Parks Nash	Monroe
L. H. Kivitt	Ramseur
Ernest Pierce	Sunbury
Shaw Curry	Laurinburg
Rosecoe Sampson	Route 1, Lumberton
Braxton Tillett	Manns Harbor
J. R. Copeland	Burlington
Lamp C. Barnes	Fort Bragg
Cuthrell Brothers	Shiloh
Dr. J. V. Sykes	Rocky Mount
D. L. Canady	Ahoskie
A. E. Boney	Lumberton
Paul D. Mason	Skyland
Tommy Hall Air Ports Service Station	Lumberton
M. B. McDaniel	Hendersonville
J. H. Hyder	Dana
Ernest Fulsher	Atlantic
Mrs. J. V. Revis	West Asheville
T. G. Hurtt	St. Pauls
A. W. Carvin	Black Mountain
H. O. Walser	Linwood
C. F. Hanes	Linwood



Donald Haynie	Marshall
E. R. Cox	Dublin
Donald Hinkle	Asheville
Tom Penny	Lumberton
G. L. Leslie	Cherokee
Capt. R. C. Reed	Asheville
J. E. Pierce	Greenville
Floyd C. Forester	Wilkesboro
Mrs. K. R. Harrell	Eure
J. L. Clark	Currie
P. B. Dickens	Wagram
L. E. McRae	Lakeview
C. C. Thornton	Holly Ridge
Albert S. Lambert	Cherokee
R. G. King	Route 5, Raleigh
C. W. Lee	Winston-Salem
G. C. Card	Manns Harbor
J. M. Ezzell	Rosehill, Route 1
James R. and J. P. Gudger Fur Farm	Mooreville
J. E. Kiser	Lincolnton
P. L. Choate	Sparta
J. R. Copland	Burlington
H. O. Walser	Linwood
Dr. J. V. Sykes	Rocky Mount
J. H. Nyder	Hendersonville
Lee Fox	Spruce Pine
Z. N. Burnett	Gaston
H. F. Rice	Asheville
Dr. Brodie B. McDade	Burlington
T. F. Barnes	Wilson
C. Nestus Freeman	Wilson
Mrs. B. O. Peterson	Delco
Jack Bedsole	Roseboro
R. H. Gregory	Rocky Mount
Russell McKinley	Washington
Charles A. Moore	Charlotte
City of Wilmington (Complimentary)	Wilmington
The Washington Field Museum (Complimentary)	Washington
E. R. Cox	Dublin
T. L. Silver	Raleigh, Route 4
Francis Hampton	Linville
Jimmie Adams	Lumberton
City of Kinston (Complimentary)	Kinston
C. W. Toms, Jr.	Durham
J. L. Hodge	Salisbury, Route 5
H. T. Wells	Clinton
Charlie Drewett	Pleasant Hill
Mrs. Maude Morris	Black Mountain
W. F. Welch	Warrensville
T. D. Larkins	Lumberton
David Harris	Lumberton

H. Vance Cox	Ramseur
H. L. Troutman	Concord
H. B. Fields	Efland
Ernel Fulcher	Atlantic
M. M. Poole	Jackson Springs
L. C. Barnes	Fort Bragg
J. S. Williams	Lumberton
D. K. Stroud	Pink Hill
D. G. Grubbs	Seaboard
Eugene Nye	Lumberton
C. A. Tucker	St. Pauls
A. W. Cavin	Black Mountain
E. L. Sims	Rosman

## PERMITS TO KEEP GAME ANIMALS IN CAPTIVITY

July 1, 1941 to June 30, 1942

Robert Noell	Middleton
C. B. Jones	Elizabeth City
Ernest Baine	Kinston
Charles Odom	Raeford
W. F. Pollard	Rocky Mount
E. T. Parker	Eure
Dr. Joseph Gill	Elizabeth City
Clarence Mackey	Marion
George Hale Quidley	Manteo
John H. Ford	Newton
D. H. Rudisell	Charlotte
C. L. Terrell	Burlington
W. C. Stephenson	Pendleton
Sgt. LaFrance	Camp Davis
Tom Brown	Asheville
T. M. Beam	Senia
H. O. Walser	Linwood
J. B. Forbes	Buladean
Frank Neal	Lumberton
Mrs. Reuben Duncan	Currituck
Leroy Bruton	Fayetteville
James Mayberry	Spruce Pine
Wesley Burgess	Shawboro
Zeb V. Wheeler	Louisburg
R. G. King	Raleigh
Hart Tarkington	Columbia
Dr. J. V. Sykes	Rocky Mount
E. M. Jarrett	Asheville
J. P. Brewer	Tarboro
Roy Teague	Taylorsville
The Silver Moon	Taylorsville
E. A. McLain	Raleigh
H. F. Rice	West Asheville
L. R. McRae	Lakeview



The Washington Field Museum (Complimentary)	Washington
City of Wilmington (Complimentary)	Wilmington
City of Kinston (Complimentary)	Kinston
Greensboro Country Park	Greensboro
T. L. Silvers	Raleigh
Crowson Edwards	Lumberton
C. B. Jones	Elizabeth City
Dr. Joseph A. Gill	Elizabeth City
G. C. Card	Manns Harbor
C. Nestus Freeman	Wilson
Russell McKinley	Washington
Floyd C. Forester	North Wilkesboro
P. L. Choate	Sparta
Julia Eborn	Belhaven
E. R. Cox	Dublin
R. H. Gregory	Rocky Mount
C. A. Moore	Charlotte
J. B. Wright	Raleigh
W. J. Corn	Arden
E. V. Parker	Eure
J. L. Hodge	Salisbury
Floyd Barnes	Wilson
B. Keilman	Rockingham
T. L. Whisnant	Fayetteville
J. E. Pierce	Greenville
H. L. Troutman	Concord
Eugene Nye	Lumberton
T. D. Larkins	Lumberton
L. F. McAlhaney	Cherokee
W. C. Stephenson	Pendleton
W. Z. Burnette	Gaston
E. L. Binkley	Hobbsville
Mrs. L. B. Hinson	Jackson Springs
A. W. Cavin	Black Mountain
T. W. Garris	Watha
Charlie Bennett	Lumberton

## SCIENTIFIC COLLECTING PERMITS

July 1, 1940 to JUNE 30, 1941

Allen Ballard	Route 1, Kinston
W. B. Knight, Jr.	Garner
Jack Johnson	Route 6, Lexington
W. W. Jamison, Jr.	Route 5, Hendersonville
Charles S. Sullivan	Raleigh
Charles I. Bunn	Raleigh
Wallace J. Majure	Raleigh
Seth Gordon, Jr.	Fayetteville
Joe F. Wilson	Montreat
E. V. Floyd	Raleigh
Henry O. Havemayer	Suite 1415, 111 Broadway, New York City

Mrs. Effie A. Anthony	Box 1144, Pinehurst
Ira N. Gabrielson	Washington, D. C.
R. M. Schiels	Gastonia
Sterling Brackett	Chapel Hill
Dr. A. Wetmore	Washington, D. C.
Dr. J. J. Murray	Lexington, Va.
Mark Taylor	Raleigh
J. W. Kistler	Raleigh
H. C. Rucker	Hoffman
Clyde P. Patton	Kinston
Edward L. Meadows	Asheville
Ben James	Robersonville
J. C. Darsie	Salisbury
R. B. Armfield	Raleigh
Ross O. Stevens	Raleigh
Willis King	Raleigh
Joe C. Rabb	Elizabeth City
Frank B. Meacham	Raleigh
Tom Jones	Elizabeth City
Mrs. O. F. Jenson	Chapel Hill
Ancil D. Holloway	Asheville
Dr. B. B. Brandt	Greenville
William Montagna	Ithaca, N. Y.
Kenneth L. Duke	Durham
Dr. A. S. Pearse	Durham
J. W. Jones	Asheville
Edward H. Brown	Charlotte
Dr. Reinard Harkema	Raleigh
Frederick R. Flickinger	Toledo, Ohio
Emmet T. Hooper	Ann Arbor, Michigan
J. A. King	Ann Arbor, Michigan

## SCIENTIFIC COLLECTING PERMITS

July 1, 1941 to June 30, 1942

Dr. Edwin M. Husbrouck	Washington, D. C.
Rev. John H. Grey, Jr.	Raleigh
E. V. Floyd	Raleigh
Leoandus Wilkes	Route 1, Garner
Verne E. Davison and Sydney Franklin	Spartanburg, South Carolina
Thomas L. Quay	Raleigh
Dr. Ira N. Gabrielson	Washington, D. C.
John D. Findlay	Raleigh
Mrs. O. F. Jensen	Chapel Hill
Donald H. Lamore	Fort Bragg
A. Wetmore	Washington, D. C.
Mrs. H. D. Crockford	Chapel Hill
Ancil D. Holloway	Asheville
R. M. Schiels	Gastonia
A. J. Murray	Lexington, Va.
F. B. Meacham	Raleigh



John H. Grey, Jr.	Raleigh
Frank Lipp	Toledo, Ohio
E. L. Meadows	Asheville
Seth Gordon, Jr.	Fayetteville
Lowell Harris	Fayetteville
Marshall Carter	Fayetteville
Charles Smith	Fayetteville
Samuel A. Harper	Cocoa, Florida

## INLAND FISHERIES

Trout and Warm Water Fish distributed from State and Federal Hatcheries in North Carolina during the biennium totaled 5,692,948. Of these, 4,838,168 were trout and 854,780 were Warm Water Fish.

Operations at the hatcheries have been carried on in a satisfactory manner under the supervision of Dr. Willis King, Supervisor of Fish Resources in the State. The tabulation accompanying this section of the report shows total distribution by hatcheries, species and years.

A slightly different policy has been inaugurated in respect to the distribution of fish produced in the hatcheries. An attempt has been made to rear more trout to legal size than formerly, which necessarily cuts down in number, but we believe this is giving better results.

A short resume of activities at each hatchery is given below:

### MORRISON FISH HATCHERY, WAYNESVILLE

During the biennium a WPA project has been completed at this plant. Grading around the new pools and construction of drainage and structures and walkways about the grounds have been completed. The plant has been operated at its capacity. Water rights have been secured from both forks of Winchester Creek.

### PETE MURPHY HATCHERY, MARION

Materials for a new water system have been purchased and are in process of installation. Damage done to the ponds by the flood in August 1940, has been repaired. A new spillway has been built at the bass pond and a new feed shed constructed.

### BOONE FISH HATCHERY, BOONE

Operations at this point have been reduced 50 per cent because of inadequate water supply and the plant is now being used as a rearing station only. Continued operation of this plant is of doubtful value.

### ROARING GAP FISH HATCHERY, ROARING GAP

This plant is fully developed, in good condition and operated at capacity. The water supply failed during 1941. However, a large portion of the stock was saved by releasing in Roaring Gap Lake, a great many being recovered later.

### STEDMAN FISH HATCHERY, FAYETTEVILLE

Inadequate returns have been received at this plant for two reasons. The plant is too small to furnish demands made upon it, and it was and is still handicapped on account of a break in the dam in May 1941. Repairs were made but not sufficient to carry a head of water. The successful operation of this plant depends on whether or not we are successful in getting a permanent repair job done.

### MOUNT MITCHELL REARING STATION

The small plant in operation at the Mount Mitchell Game Farm has been used as a rearing plant only. A large number of trout were transferred from Marion and Waynesville to this point for rearing and later distribution.



### PROPOSED SMALLMOUTH BASS HATCHERY

The Mackeys Creek property containing about 100 acres, located in McDowell County, has been sold. It was found unsuitable for development of a warm water hatchery both from an engineering and fish cultural standpoint. Two hundred and fifty-five acres of land have been purchased on Irish Creek in Burke County with the proceeds of the Mackeys Creek property, plus \$100.00. Here there is an adequate water supply and room for 25 rearing pools. Construction of this plant would be possible only through special appropriations.

A public fishing program was inaugurated on the Sandhills area at Hoffman. Fishing permits were sold at 50c each and boats rented for 50c each. During the season 1941-42, the four lakes fished furnished sport to 2,840 anglers, who took 7,776 fish, weighing a total of 3,464 pounds. This program holds great promise for North Carolina anglers.

A stream survey crew operated during the summers of 1941 and 1942 in Western North Carolina, making a survey of streams suitable for carrying trout. This data is of great value in making distribution from the hatcheries. The reports of this survey crew are on file and available for use.

The policy of the inland fisheries division is and has been to give public waters priority in distribution and stocking.

A concrete dam has been constructed at Lake Waccamaw which maintains a constant level of water in the lake. This has improved both fishing and boating on the lake.

The inland fisheries program in the State can hardly expand further without additional revenue. A county fishing license for each county in the State would provide approximately \$40,000 additional fishing license revenue each year. This would go a long way in supplementing present revenues and is a question for serious consideration.

Protectors, during the two year period of this report, prosecuted 1,858 persons on charges of violating the inland fishing laws and regulations. The courts levied fines totaling \$6,892.18 and costs aggregating \$10,510.29 against the offenders. Following is a summary of the prosecutions for the two fiscal years:

#### INLAND FISHING PROSECUTIONS

July 1, 1940 to June 30, 1941

Number of cases.....	1,178
Amount of Fines.....	\$4,715.68
Amount of Costs.....	6,800.49

July 1, 1941 to June 30, 1942

Number of cases.....	680
Amount of Fines.....	\$2,176.50
Amount of Costs.....	3,709.80

#### REPORTS FROM FEDERAL HATCHERIES

Data on fish released in North Carolina waters from the Federal Hatcheries are incomplete. Full reports are available only since January 1, 1942. During the period January 1, 1942 to June 30, 1942, the record is as follows:

Brook trout.....	64,734	Crappie .....	1,625
Rainbow trout.....	34,428	Bream .....	24,360
Brown trout.....	50	White perch (fry).....	47,000
Smallmouth bass.....	7,000	Yellow perch (fry).....	1,746,000
Largemouth bass.....	439,800		
Total .....			2,364,997

The striped bass (rockfish) hatchery at Weldon was operated in 1941. A total of 469,000 fry were released in the Roanoke River at Weldon. In 1942, no female rockfish were brought to the Hatchery, and no distribution was made. The reason for the failure may be explained as partly a result of changes in the regulations affecting the taking of the fish, and partly the reduced number of female rockfish which ascended the stream to spawn. The latter may have been a result of the pollution of the Roanoke River at Plymouth affecting the upstream migration of the fish.



## FISHING LICENSE RECEIPTS BY COUNTIES, Calendar Year 1940

County	Non-Resident Licenses	Non-Resident Permits	State Licenses	State Permits	County Licenses	Receipts
Alamance.....			65	52		\$ 156.00
Alexander.....		1	38	70		112.00
Alleghany.....		10	39	21	120	218.50
Anson.....			35	35		87.50
Ashe.....			20	14	156	203.00
Avery.....	40	129	145	36	234	871.00
Beaufort.....	1	6	68	269		281.50
Bertie.....		1	38	37		95.50
Bladen.....	3	1	57	196		228.00
Brunswick.....	1	4	17	50		68.00
Buncombe.....	28	57	1,125	142	254	2,772.00
Burke.....	12	153	370	980	1,149	2,592.00
Cabarrus.....			403	248		930.00
Caldwell.....	1	10	447	34	708	1,634.00
Camden, See Pasquotank.....						
Carteret.....	7	15	3	6		59.00
Caswell.....	1	1	2			10.00
Catawba.....	1	9	578	115	737	1,964.50
Chatham.....			12	23		35.50
Cherokee.....	11	95	260	89	228	942.50
Chowan.....	4	3	7	66		70.00
Clay.....	6	38	82	21	75	317.50
Cleveland.....			256	95		559.50
Columbus.....	10	35	123	867		764.50
Craven.....	8	10	64	494		425.00
Cumberland.....	1	2	113	243		354.50
Currituck.....	62	263	43	269		793.50
Dare.....	27	163	25	150		423.00
Davidson.....			79	164		240.00
Davie.....			9	1		18.50
Duplin.....			28	56		84.00
Durham.....		6	295	147		669.50
Edgecombe.....		3	179	270		496.00
Forsyth.....	2		360	141		800.50
Franklin.....			13	14		33.00
Gaston.....			178	13		362.50
Gates.....	6	29	14	62		118.00
Graham.....	154	850	105	329	75	2,069.50
Granville.....			18	1		36.50
Greene.....			44	122		149.00
Guilford.....	2	8	315	90		693.00
Halifax.....		19	157	107		386.50
Harnett.....			287	366		757.00
Haywood.....	19	116	612	196	692	2,225.00
Henderson.....	86	237	268	78	346	1,588.00
Hertford.....	2	4	26	22		77.00
Hoke.....			9	3		19.50
Hyde.....	6	153	83	1,037		867.50
Iredell.....			129	54		285.00
Jackson.....	47	111	174	37	141	853.50
Johnston.....	2	12	156	411		539.50
Jones.....			3	11		11.50
Lee.....			41	21		92.50
Lenoir.....	4	10	275	386		773.00
Lincoln.....			84	87		211.50
McDowell.....	7	41	137	223	672	1,133.50

FISHING LICENSE RECEIPTS BY COUNTIES, 1940 — *Continued*

County	Non-Resident Licenses	Non-Resident Permits	State Licenses	State Permits	County Licenses	Receipts
Macon.....	23	120	106	56	380	\$ 855.00
Madison.....	5		31	3		88.50
Martin.....		6	41	42		109.00
Mecklenburg.....		1	243	61		517.50
Mitchell.....	3	15	216	77	101	601.50
Montgomery.....			12	31		39.50
Moore.....	2	12	20	114		119.00
Nash.....		1	70	126		204.00
New Hanover.....	3	12	116	109		313.50
Northampton.....		5	49	53		129.50
Onslow.....		13	44	219		210.50
Orange.....			55	16		118.00
Pamlico.....				4		2.00
Pasquotank—Camden.....	1	2	35			77.00
Pender.....	1	1	31	139		137.50
Perquimans.....			2	3		5.50
Person.....	1		23	4		53.00
Pitt.....	1	2	220	152		523.00
Polk.....	92	337	89	271	306	1,416.50
Randolph.....			64	49		152.50
Richmond.....	8	29	183	234		552.00
Robeson.....	9	11	110	181		366.50
Rockingham.....			75			150.00
Rowan.....			84	69		202.50
Rutherford.....	102	490	464	774	386	2,701.00
Sampson.....	1	12	39	93		141.50
Scotland.....	4	4	22	38		87.00
Stanly.....			51	64		134.00
Stokes.....			17	16		42.00
Surry.....			41			82.00
Swain.....	41	269	108	107	384	1,127.50
Transylvania.....	23	157	116	64	243	779.00
Tyrrell.....	4	11	19	49		93.50
Union.....		3	41	198		184.00
Vance.....			46	26		105.00
Wake.....	2	1	342	138		764.00
Warren.....			9			18.00
Washington.....		13	23	63		90.50
Watauga.....	9	17	69	12	112	318.00
Wayne.....		5	133	192		367.00
Wilkes.....			84	35	240	425.50
Wilson.....		2	260	274		659.00
Yadkin.....			2	1		4.50
Yancey.....		3	68	28	122	275.00
Miscellaneous Sales.....	10	13	13			89.00
TOTAL.....	906	4,172	12,399	13,256	7,861	\$ 47,989.00
Lake Mattamuskeet.....						1,585.50
Western Refuges.....						1,765.50
To Proportionate Part of Combination Licenses from Game to Inland Fisheries.....						26,122.50
GRAND TOTAL.....						\$ 77,462.50



## FISHING LICENSE RECEIPTS BY COUNTIES, Calendar Year 1941

County	Non-Resident Licenses	Non-Resident Permits	State Licenses	State Permits	County Licenses	Receipts
Alamance.....			72	54		\$ 171.00
Alexander.....		8	60	83		169.50
Alleghany.....	3	20	43	20	113	244.00
Anson.....		3	50	36		121.00
Ashe.....		2	20	12	171	219.00
Avery.....	29	86	127	50	197	707.00
Beaufort.....	2	27	85	621		517.50
Bertie.....		2	56	40		134.00
Bladen.....	3	3	55	144		200.00
Brunswick.....	1	7	28	99		117.50
Buncombe.....	7	64	1,428	198	255	3,309.00
Burke.....	9	128	440	1,068	1,056	2,643.00
Cabarrus.....			475	375		1,137.50
Caldwell.....		5	525	36	675	1,748.00
Camden, See Pasquotank.....						
Carteret.....	7	11	11	17		76.50
Caswell.....			4			8.00
Catawba.....	2	8	607	133	626	1,924.50
Chatham.....			18	28		50.00
Cherokee.....	90	1,166	385	142	1,109	3,533.00
Chowan.....	4	10	19	58		97.00
Clay.....	8	28	137	23	262	615.50
Cleveland.....		4	274	153		628.50
Columbus.....	8	33	148	866		802.00
Craven.....	3	22	113	728		627.00
Cumberland.....	3	3	228	100		524.00
Currituck.....	120	674	80	498		1,683.00
Dare.....	57	491	84	332		1,110.00
Davidson.....		5	85	281		315.50
Davie.....			15	4		32.00
Duplin.....		2	29	54		87.00
Durham.....			344	252		814.00
Edgecombe.....	2	13	194	245		533.50
Forsyth.....	1	1	380	198		865.00
Franklin.....			16	3		33.50
Gaston.....			165	15		337.50
Gates.....	16	39	15	37		167.50
Graham.....	153	699	166	260	397	2,323.00
Granville.....			32	11		69.50
Greene.....	1	2	56	149		193.50
Guilford.....	5	5	350	132		796.00
Halifax.....	4	49	196	163		542.50
Harnett.....			313	292		772.00
Haywood.....	35	200	777	210	878	2,912.00
Henderson.....	54	141	303	52	319	1,362.00
Hertford.....	3	3	33	29		98.50
Hoke.....			24	8		52.00
Hyde.....	6	111	84	1,135		876.50
Iredell.....			149	81		338.50
Jackson.....	78	161	272	108	311	1,460.00
Johnston.....	2	5	177	426		582.00
Jones.....			8	18		25.00
Lee.....	1		81	51		192.50
Lenoir.....	4	22	301	508		898.00
Lincoln.....			113	87		269.50
McDowell.....	9	82	188	304	739	1,394.00

Lake Mattamuskeet.....	1,442.25
Western Refuges.....	2,042.50
To Proportionate Part of Combination Licenses from Game to Inland Fisheries.....	17,245.00
GRAND TOTAL.....	\$ 81,026.75



OUTPUT OF HATCHERIES  
MORRISON FISH HATCHERY  
Fayetteville

Trout Distribution for Period:	Brook Trout		Rainbow Trout		Brown Trout		Totals	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
July 1, 1940-Dec. 31, 1940...	339,400	Not recorded	328,900	Not recorded	10,000	Not recorded	678,300	-----
Jan. 1, 1941-June 30, 1941...	461,100	4,204	286,075	2,573	1,000	30	748,175	6,807
July 1, 1941-Dec. 31, 1941...	261,125	1,190.5	459,900	1,752.5	-----	-----	721,025	2,943
Jan. 1, 1942-June 30, 1942...	62,900	1,285	50,550	2,619	4,800	755	118,250	4,659
TOTALS.....	1,124,525	-----	1,125,425	-----	15,800	-----	2,265,750	-----

BOONE STATE HATCHERY

July 1, 1940-Dec. 31, 1940...	264,000	Not recorded	50,000	Not recorded	-----	-----	314,000	-----
Jan. 1, 1941-June 30, 1941...	116,045	1,453	125	29.5	-----	-----	116,170	1,482.5
July 1, 1941-Dec. 31, 1941...	195,000	1,950	76,875	766.5	-----	-----	271,875	2,716.5
Jan. 1, 1942-June 30, 1942...	25,170	981.5	1,040	86.5	-----	-----	26,210	1,068.0
TOTALS.....	600,215	-----	128,040	-----	-----	-----	728,255	-----

MURPHY HATCHERY

Marion

July 1, 1940-Dec. 31, 1940...	-----	-----	29,500	Not recorded	-----	-----	29,500	-----
Jan. 1, 1941-June 30, 1941...	-----	-----	316,050	854	129,525	162.5	445,575	1,016.5
July 1, 1941-Dec. 31, 1941...	-----	-----	319,150	885	129,525	162.5	448,675	1,047.5
Jan. 1, 1942-June 30, 1942...	8,400	316	235,176	1,727	49,750	448	293,326	2,491
TOTALS.....	8,400	-----	899,876	-----	308,800	-----	1,217,076	-----

ROARING GAP HATCHERY

July 1, 1940-Dec. 31, 1940...	101,375	Not recorded	156,005	Not recorded	8,500	Not recorded	265,880	-----
Jan. 1, 1941-June 30, 1941...	53,251	1,401	64,559	1,690	18,430	481.5	136,240	3,572.5
July 1, 1941-Dec. 31, 1941...	87,410	293	23,100	60	56,370	120.5	166,880	473.5
Jan. 1, 1942-June 30, 1942...	36,716	729.5	6,042	724.5	3,137	491	45,895	1,945
TOTALS.....	278,752	-----	249,706	-----	86,437	-----	614,895	-----

## MT. MITCHELL REARING POOLS

Trout Distribution for Period	Brook Trout	Rainbow Trout	Totals
July 1, 1940-Dec. 31, 1940.....	6,824	2,705	9,529
Jan. 1, 1941-Dec. 31, 1941.....	1,271	276	1,547
Jan. 1, 1942-June 30, 1942.....	942	174	1,116
TOTALS.....	9,037	3,155	12,192

## SUMMARY, ALL HATCHERIES

Trout Distribution for Period	Brook Trout	Rainbow Trout	Brown Trout	Totals
July 1, 1940-Dec. 31, 1940.....	711,599	567,110	18,500	1,297,209
Jan. 1, 1941-June 30, 1941.....	631,667	667,085	148,955	1,447,707
July 1, 1941-Dec. 31, 1941.....	543,535	879,025	185,895	1,608,455
Jan. 1, 1942-June 30, 1942.....	134,128	292,982	57,687	484,797
TOTALS.....	2,020,929	2,406,202	411,037	4,838,168



WARM WATER FISHES  
STEDMAN HATCHERY  
Fayetteville

Distribution for Period	Smallmouth Bass		Largemouth Bass		Bream		Crappie		Totals	
	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.	No.	Lbs.
July 1, 1940-Dec. 31, 1940..	-----	-----	111,625	Not rec.	107,213	Not rec.	13,775	Not rec.	232,613	-----
Jan. 1, 1941-June 30, 1941..	-----	-----	101,798	128+ fry	48,630	1,148	150	150	150,578	1,426+ fry
July 1, 1941-Dec. 31, 1941..	-----	-----	11,430	260.5+ fry	188,250	1,008	5,215	61	204,895	1,329.5+ fry
Jan. 1, 1942-June 30, 1942..	-----	-----	32,150	369+ fry	25,786	176.5	-----	-----	57,936	545.5+ fry
TOTALS.....	-----	-----	257,003	-----	369,879	-----	19,140	-----	646,022	-----

MURPHY HATCHERY  
Marion

July 1, 1940-Dec. 31, 1940..	-----	-----	4,280	Not rec.	16,500	Not rec.	5,200	Not rec.	25,980	-----
Jan. 1, 1941-June 30, 1941..	600	fry	78,125	fry	-----	-----	10,575	423	89,300	423+ fry
July 1, 1941-Dec. 31, 1941..	1,875	31.5	600	9	8,300	22	2,950	118	13,725	180.5 13+ fry
Jan. 1, 1942-June 30, 1942..	60,000	fry	7,000	fry	1,950	13	-----	-----	68,950	-----
TOTALS.....	62,475	-----	90,005	-----	26,750	-----	18,725	-----	197,955	-----

ROARING GAP HATCHERY

July 1, 1940-Dec. 31, 1940..	-----	-----	-----	-----	-----	-----	200	Not rec.	200	-----
Jan. 1, 1941-June 30, 1941..	-----	-----	694	16.5	1,150	14	-----	-----	1,844	30.5
July 1, 1941-Dec. 31, 1941..	1,250	10	338	15	-----	-----	-----	-----	1,588	25
TOTALS.....	1,250	10	1,032	31.5	1,150	14	200	-----	3,632	55.5

SANDHILLS REARING PONDS

Jan. 1, 1941-June 30, 1941..	-----	-----	22	14	336	66	-----	-----	358	80
Jan. 1, 1942-June 30, 1942..	-----	-----	152	107	6,661	337.5	-----	-----	6,813	444.5
TOTALS.....	-----	-----	174	121	6,997	403.5	-----	-----	7,171	524.5

SUMMARY

Warm Water Fishes Dis- tributed.....	63,725	-----	348,214	-----	404,776	-----	38,065	-----	854,780	-----

## DIVISION OF MINERAL RESOURCES

In normal peace times mineral resources play an important role in the industrial life of great states and nations. During periods when every effort is being made to attain a condition of adequate national defense and to meet attacks of aggressor nations, the mineral resources of states and nations become even more important. The equipment and transportation facilities of modern armed forces are derived in a large part from mineral resources.

It is the function of the Division of Mineral Resources to make available information that will lead to the development and conservation of the State's mineral resources in a way that will make them of greatest value to the State and Nation. Due to world conditions during the biennium July 1, 1940, to June 30, 1942, demands have been made upon the Division of Mineral Resources for such information far greater than could be supplied. Considerable progress was made during the biennium and both the financial facilities and the trained personnel of the division were increased. However, if the Division is to meet the growing demands being made upon it, a further increase in appropriation and personnel will be needed.

The work of the Division of Mineral Resources may be divided into two classes: *General*, in which specific inquiries are answered and general information is furnished to interested persons, and *Field Work*, in which detailed investigations are made of specific mineral resources or of specific areas.

### GENERAL

Due to the Nation's wide search for a greater supply of both critical and strategic minerals, there has been an increased number of requests for information of a specific nature regarding a certain mineral or district, and also of a general nature about the State as a whole. The requests were not only for information regarding the location and geologic occurrence of the mineral in question, but often concerned its preparation for market, its uses, prices and marketing. Other requests came from persons desirous of contacting producers of certain minerals or mineral products. The Division attempts to answer all inquiries and thus not only serves as a source of information relative to the State's mineral resources, but endeavors to serve as a clearing house to bring together producer and user. In reply to such inquiries, some 640 mineral specimens and lots of such specimens were examined and reported upon. In reply to inquiries other than concerning mineral specimens, some 1,650 letters were written and 1,600 copies of published reports were sent out. Many requests were received for publications that are not available due to being out of print and for publications that have never been prepared.

During the biennium, two bulletins, No. 40 "Manufacturing China Clay Opportunities in North Carolina," and No. 41 "Forsterite Olivine Deposits of North Carolina and Georgia," were published. Manuscript for Bulletin No. 42 "Chromite Deposits of North Carolina" was prepared and sent to the printer. Two informal publications called Information Circulars, No. 1 "Minerals for National Defense—North Carolina's Possible Contribution," and No. 2 "Mica Production in North Carolina," were mimeographed for dis-



tribution. Several special reports containing specific but limited information on certain minerals or mineral areas have been mimeographed under the title of Reports of Investigation, and distributed to interested persons. In addition, news items and information on minerals have been furnished to the press.

In addition to the minerals reported on, as indicated above, the Division maintained a laboratory where approximately 100 assays and analyses were made on specimens from deposits of special interest. Also a great many partial and complete chemical analyses were made on specimens collected by the personnel of the Division in the course of field work. Many of these analyses have been or will be used in publications of the department.

In September 1941, the State Geologist was designated as Emergency Coordinator of Mines for North Carolina to cooperate with the War Production Board. These duties have consisted of collecting all available information on mines and quarries in the State and certifying these mines and quarries to the Division of Mine Priorities in the War Production Board for serial numbers under Preference Rating Order P-56. By order of the War Production Board, it was necessary for each mine and quarry to have a serial number in order to secure the proper priority rating for the purchase of materials and supplies. Serial numbers have been secured for 124 mines and quarries in North Carolina.

The program of cooperative work with the U. S. Bureau of Mines for collecting the mineral production statistics of the State has been continued. Information obtained indicates that all mining operations in the State have experienced a period of unusual activity during the biennium. Production figures for 1940 reached approximately \$20,000,000, a new high for the State. The 1941 figures are not complete but all indications are that they will exceed those of 1940 by a substantial amount.

### FIELD WORK

During the biennium a definite program of field work was inaugurated and cooperative projects were undertaken with the U. S. Geological Survey and the Tennessee Valley Authority, for the study of specific mineral resources. This is the first time such projects have been undertaken by the Division of Mineral Resources in the history of the present Department of Conservation and Development, and they have greatly increased the usefulness of the division to the mineral industry of the State. These projects were made possible through the interest of Governor J. M. Broughton, who made available the necessary increase in the funds of the Division by an allotment from the Emergency and Contingency Fund.

Two cooperative projects have been established with the U. S. Geological Survey, one for the study of pegmatites and the other for the study of ground water. Pegmatites are of special interest because they are the geological formations from which mica, feldspar and kaolin are obtained. Ground water is becoming increasingly important as a source of water supplies for towns, schools, Army camps and industrial plants.

The pegmatites of the Spruce Pine District have been studied and a complete report and geological map have been prepared. It is expected that this report will be available for distribution as a printed bulletin in the near future. Work is being continued in other parts of the State, particularly in Haywood, Jackson, Macon and adjacent counties, and a report on this

area should be completed in the near future. The data obtained on mica is so important that the U. S. Geological Survey is planning to increase and enlarge the program of study during the coming year.

Interest in kaolin as a source of aluminum became so great that early in 1942 the U. S. Geological Survey made a special study of kaolin to determine the tonnage of this clay available in the State. The figures obtained are a part of the information being collected in connection with the study of important war minerals and will probably not be made public until the end of the war.

Due to conditions resulting from the war, mica imports from most foreign countries are now cut off. As a result, the War Production Board has appointed the Colonial Mica Corporation an agent of the Metals Reserve Corporation for the purpose of bringing about an increased production of domestic mica. To date, mining machinery and equipment have been made available to more than 100 mica mines in the State.

The work accomplished by the coöperative project for the study of ground water may be summarized as follows:

The principal phase of the investigation has been the collecting of detailed hydrological and geological data, which, when tabulated, analyzed, evaluated and published, will be very valuable in development and conservation of ground water supplies. An area consisting of Northampton, Halifax, Edgecombe, Nash, and Wilson counties was chosen as the first unit for intensive investigation. Field work in this area has been completed and a report will be prepared during the winter of 1942-1943. Work has begun in a second area, to consist of Alamance, Guilford, and some adjoining counties. About six weeks were also spent in obtaining data in the vicinity of New Bern, Jacksonville, and Wilmington. This data has proven an important factor in development of ground water supplies for the military bases in this area. To date, records have been obtained for more than 1,200 wells, analyses have been made of 83 water samples, logs of more than 100 wells and samples from a number of wells have been collected. The logs and samples are being studied to determine the extent, thickness and structure of the formations and the samples are also studied to determine the water transmitting and the water yielding properties.

A second phase of the work has been to assist and advise in the development of ground water supplies for the military bases being constructed. Reports, memoranda, or letters have been written giving such assistance for the Lighter-than-Air Base at Elizabeth City, the Marine Air Base at Cherry Point, the Marine Base at New River, the Air Base at Maxton, the Air Base at Goldsboro, the Fairchild Aircraft plant at Burlington, and the Air Base at the Raleigh-Durham Airport. A report has also been made regarding the salt water contamination of the public water supply at New Bern. The records and other information are being obtained on all wells drilled at these bases and samples from a number of wells are being saved. This information is of great value geologically and hydrologically.

A third phase of the work is the establishing and maintaining of observation wells, so that fluctuations of the water level can be measured and studied. Since July 1941, 4 observation wells have been established in addition to about 30 wells already being maintained in the State.



In September 1940, a visit was made to the headquarters of the Tennessee Valley Authority in Knoxville, Tennessee, which led to a very cordial program of coöperative field work. During the fall of 1940 informal co-operative examinations were made of a number of mineral deposits in Western North Carolina.

Early in 1941 an agreement was made to carry out a coöperative study of chromite and vermiculite deposits in the State. This program was followed through the year and a report on chromite has been completed and is now in the process of being published. A report has been prepared on vermiculite and is now being edited for publication. As a result of this work there is developing considerable interest in the chromite deposits of the State, while a marked increase in the production of vermiculite has already been noted.

Early in 1942, plans were made for the coöperative study of certain copper deposits in Western North Carolina, and a re-examination of certain old corundum mines in the State. Splendid progress has been made on this program and much valuable information is being collected.

In addition to the coöperative projects outlined above, the personnel of the Division has attempted to carry on as complete a program of field work as possible. A study of the manganese deposits of the State has been partly completed, and as a result of this work, one deposit in McDowell County is being developed. An ilmenite deposit in Caldwell County has been studied in some detail and is now being developed. The limestone deposits of Yadkin and adjacent counties have been examined as a possible source of agricultural limestone for the farmers of that region. A study to determine the possibilities of producing a large ground water supply in that vicinity was made at the request of the town of Waynesville. Approximately 50 well sites have been selected for towns, schools, and other divisions of local and state government.

### RECOMMENDATIONS

The program of coöperation with the U. S. Geological Survey and the Tennessee Valley Authority has been of special help in two ways. It has increased the amount of money available for field work by 50 per cent or more, and has brought into the State, to and in the study of its mineral resources, some of the best trained geologists in the country. This program should be retained and enlarged.

In addition to geological field studies, it is often desirable to have certain laboratory tests made to determine the best methods of preparation for market, as well as new uses and applications of minerals. By coöperating with the U. S. Bureau of Mines, the Tennessee Valley Authority, and the various State Institutions in North Carolina, such tests can be made for a small fraction of the cost of a State owned and operated research laboratory.

The information gathered in field and laboratory investigations of the State's mineral resources should be made available as rapidly and completely as possible to the citizens of the State and interested mining and mineral interests. Funds should be available for publishing all information of value in the form of bulletins, economic papers and information circulars as fast as it is available.

## DIVISION OF STATE ADVERTISING

A seeming paradox has characterized the State Advertising program during the biennium just ended—there has been strict adherence to a fluid policy, a policy which could be shifted upon a moment's notice. Adoption of such a policy was considered not only desirable but also absolutely necessary to keep pace with changing economic conditions brought on by World War II.

At the beginning of this period no one, of course, had any idea that there would be a Pearl Harbor and the dearth of rubber and gasoline that followed soon after. No one could foresee that as a result of rubber and gasoline shortages, which were not then evident, the tourist industry as then known, would be so vitally affected.

### INDUSTRIAL ADVERTISING

It was evident, however, that the needs of the Lend-Lease program, and the growing demands of America's expanding military and naval establishments, would result in rapid industrial development and a greater market for raw materials and foodstuffs. Surveys were started immediately to determine just what North Carolina had to offer the industrialist seeking plant expansion, to the nation's stockpile of vitally needed raw materials, particularly in the field of minerals, and to the nation's breadbasket.

Such surveys showed ample available power, several million square feet of plant facilities, a plentiful supply of native-born labor, ideal transportation facilities due to the State's geographic location in respect to the bulk of America's heavy war plant centers, and an unsurpassed year-round working climate; that North Carolina's hills and mountains contain many vitally needed minerals, including mica, copper, vermiculite, olivine, a source of magnesium metal, manganese, chromite, and spodumene. Information gathered from these surveys was used as the basis of industrial advertisements carried in such publications as *Fortune*, *Time*, *Newsweek*, *Nation's Business*, and *Business Week*.

In North Carolina advertising copy first appeared the phrase: *use idle plant facilities . . . available plants already built*. This slogan was immediately picked up by editorial writers and radio commentators. Soon thereafter the War Production Board issued a directive to the Army and Navy ordering utilization of idle plant facilities to save building materials, labor and time. Perhaps the timing of the WPB directive was a coincidence. Adoption of the slogan by the newspapers and radio were not, for it was described by them as, *The North Carolina Plan*.

Due to wartime censorship restrictions it is inadvisable to describe in detail new war industries now operating and in the process of getting under way in North Carolina, nor can activities in the field of minerals be elaborated upon. It can be said, however, that North Carolina has, through her Advertising Program, told American industrialists what she has to offer, and industry has and is taking advantage of those possibilities.

The industrial phase was heavily emphasized late in the fiscal year of 1941 and in 1942, and the campaign was so successful that various Divisions affected by the inquiries have been hard pressed to service requests for information. Directly and indirectly, the industrial advertising campaign



has resulted in millions of dollars in new plants for this state, and more are in prospect this year.

One of the most important phases of the advertising program has been the exploitation of North Carolina's mineral resources. This was done in conjunction with the industrial copy which suggested various minerals as raw materials for needed war supplies. As a result of advertising these resources, more than 100 large and responsible industrial concerns have made inquiries about the minerals, and many of them are at this writing making extensive studies of the state, which the Department believes will lead to substantial development, not only during the emergency, but of a permanent nature.

As in the case of travel, this campaign has been supported by a vigorous news and information service, aimed at reaching the business man.

### AGRICULTURAL SCHEDULES

Another phase of the campaign, which has been prosecuted and is being continued, is a program to attract to the state dairymen, beef producers, poultrymen and other types of agriculturists in which the state is deficient. North Carolina has plenty of ideal farm land available for a more diversified agriculture than is now practiced, and to bring the state's advantages to the attention of farmers the Division ran several series of advertisements in farm periodicals. Facts pertaining to agriculture were placed before the appropriate National audiences through such media as *Hoard's Dairyman*, *American Poultry Journal*, *Poultry Tribune*, *The Country Gentleman*, and *The Farm Journal*. Hundreds of replies are being received and serviced by pamphlets, direct letters and by letters from real estate brokers and others in local communities.

While the restrictions on buildings in 1942 prevent large-scale construction of new farm buildings, the campaign is building up a large and potentially valuable army of migrants for the day when such a migration into the State will be of inestimable benefit.

In planning and carrying out the various agricultural schedules, the Division had the active assistance and coöperation of the Extension Service at N. C. State College and the N. C. Department of Agriculture.

### TOURIST PROGRAM

The Division went through drastic policy changes, occasioned by the war, in connection with tourist advertising. In 1940 and 1941, continued emphasis was put upon promotion of the state's ever-increasing travel industry, and response to this campaign continued throughout the first of 1942, even surmounting to a surprising extent the restrictions on automobile travel during the summer of 1942.

During the two years, and up until the summer of 1942, the volume of travel and of money spent in North Carolina by vacationists continued to grow, according to reports from hotels and resorts. Accurate counts of out-of-state travel in National Parks and Forests indicated a substantial increase.

All other barometers of travel trade likewise demonstrate the fact that North Carolina's investment in travel promotion has been paying dividends. For the first time, the "Lost Colony," historical drama on Roanoke Island, attracted enough patronage to net a return over expenses. Beaches and

Sandhill resorts had excellent seasons, and there was a substantial increase in patronage of auto courts and tourist homes.

To attract this business the state continued its normal schedules through the calendar year 1941. A few magazines were used in the spring of 1942 and since that time, newspapers have carried most of this type of advertising, since copy is required only a short time before publication. As a result of these schedules, some 225,000 booklets and other pieces of literature were distributed during the two-year period. Stories and pictures were placed during this time in hundreds of newspapers and magazines.

Richard J. Reynolds, mayor of Winston-Salem, financed and had made a travel movie of North Carolina under the title of "North Carolina—Variety Vacationland." The making of this valuable film required nearly a year's time, and cost the state nothing except for prints. Thirty-three prints in two versions—long and short—are now in circulation and are in brisk demand. They have been shown already some 1,250 times before audiences totaling more than 200,000 persons. Showings have been in 28 states, the District of Columbia and Canada.

The Division has been requested by the War department to supply ten prints for showing to soldiers at home and abroad, and it is felt that this project will create in these audiences of young men a desire to visit this state which will bear fruit for many years to come.

The Division also worked with the noted photographer, James Fitzpatrick, in making a travelogue of the mountain area which is being shown all over America, and also arranged for dozens of news-reel projects. One of its most important functions has been to aid both native and out-of-state writers in obtaining material and pictures for articles on North Carolina. Among the most fruitful of these projects resulted in a comprehensive story in *National Geographic*. Articles either prepared by this office or suggested to editors by it have been published in the leading periodicals of the nation, including almost every prominent newspaper and magazine. The demand for North Carolina material seems undiminished.

During the two years, the Division received and answered a total of 48,025 inquiries relating only to travel and not including the many industrial and agricultural inquiries.

Beginning in early 1942, the Division cut travel sharply and reduced personnel from seven to five. At the same time, the urgent demands of the nation presented both problems and opportunities for the State in industrial, commercial and raw material fields.

Advantages to be gained through limited tourist advertising, since Pearl Harbor, have not been overlooked. Abbreviated *tourist* schedules, with media carefully chosen to avoid any long time-lag between time of writing copy and day of publication, have been run from time to time. The results of these schedules have demonstrated the soundness of the course pursued.

Advertising copy mentioned above featured the theme of *keep fit in mind and body for National Defense*, and pointed out that the experience of nations at war since 1939 had shown that the war-worker who takes an occasional vacation is a more efficient worker. This theme has been in keeping with pronouncements by President Roosevelt and other governmental officials.

All advertising copy, in the three main divisions of Tourist, Industrial and



Agricultural, has carried the patriotic motif, and has been designed not only to serve the best interests of the State, but also to aid in the war effort.

State advertising in war time, careful consideration and experience has demonstrated, has a definite place, and does much to promote future development and growth as well as to bring increased industrial activity in the State.

Advertising—whether by individuals or by states—is largely valuable by continued repetition. Experience of large corporations has proven that sporadic and intermittent advertising is of less value than the continued display of wares. North Carolina's advertising campaign—now five years old—aims at holding onto the investment in national repute and interest, with a present and future harvest of continued growth and development in every field we possess.

# DIVISION OF WATER RESOURCES AND ENGINEERING

## INTRODUCTION

One of the greatest elements of natural resources in the State of North Carolina is its water resources. The rapid development of the State has been due in a large part to the use of these abundant water resources.

In the early stages of development of the water resources of this State there was abundant pure water to be had in all the streams. With increasing growth of population, the rise of urban centers, rapid increase in the number of industries using water supplies and the streams for the disposal of wastes, the conflict of uses becomes of great importance. Everyone made use of the water resources with an idea for his own purpose with little consideration for other uses. Industries began to discharge large quantities of waste into the streams, often causing a nuisance, killing fish, making bathing and boating impossible, and either requiring very expensive filter plants or rendering the water unfit for public water supplies.

Rivers form the cheapest and most frequently used channels for removal of domestic sewage and industrial waste. Such a use of a river is reasonable and proper so long as public health or interest is not adversely affected. On the other hand, both municipalities and industries require sources of pure water and the public interest requires waters where resort developments may be safely constructed and in which fish may live.

A great loss to the State is caused by the cutting of forests on steep slopes and the adoption of cropping practices which permit heavy damage from soil erosion. These not only cause a loss to the farmer by impoverishing the soil, but also fill stream channels, silt reservoirs, muddy water supplies and lessen the ground water supply. Rain falling in these areas runs off into the streams without any retardation, stopping the infiltration of ground water upon which underground water supplies depend and greatly increasing the frequency and severity of floods. With the deficient ground water storage, the dry weather flow of streams will be diminished and droughts will become matters of real consequence.

Along the coast and in the tidal waters of North Carolina several other problems are presented. Navigation becomes more important and the depth of channels, maintenance of inlets in the barrier reef, provision of harbors, the prevention of pollution, the control of beach erosion, the maintenance of proper conditions for the propagation of shell fish, food fish, and aquatic bird life must be provided for.

The work of the Water Resources Division is directed to the solution of these problems and others related thereto. It seeks to collect essential data, to make studies of all these conditions, to consider the effect of each proposed development upon other uses, and show the way to conserve these resources so they may not be exploited and wasted but be dedicated to the best use for the largest number of people.



## PERSONNEL

The personnel of this division has undergone several changes since the last Biennial Report. Theodore S. Johnson gave up the position of Chief Engineer of the Division in order to devote his full time to National Defense work in the State. Since May, 1942, at which time Mr. Johnson left the Division, the work has been carried on by W. H. Riley as Acting Chief Engineer.

Robert H. Grady was appointed Assistant Engineer to fill the position of Carroll L. Mann, Jr., in July 1941. His services terminated in February, 1942, when he accepted a position on defense work.

Raleigh T. Daniels was appointed as chemist in September, 1941, and terminated his services in May, 1942, to join the Armed Forces of the Nation.

Charles E. Feltner, who was engaged as part-time Assistant Engineer on coastal study each summer, was called to the Army soon after completing the 1940 work.

Howard A. Ballard was appointed temporarily as Assistant Engineer on June 6, 1942, in charge of repair to stream gaging stations in the East.

W. H. Riley and F. E. Day are Assistant Engineers, the former with headquarters in Raleigh and the latter in the District Engineer's Office, U. S. Geological Survey, at Asheville.

Mrs. Frankie Moose, secretary to the Division, resigned in January, 1942. On June 1, 1942, her vacancy was filled by Miss Ann Winecoff for one month. On July 1, 1942, Miss Frances Moore was appointed as secretary for the Division.

At the present time, the positions of Chief Engineer and chemist are unfilled. Naturally, with the cut in personnel, it is impossible to carry on the full program of the Division. Due to the present emergency demanding so many engineers and calling so many to the Armed Forces, the filling of the vacant positions is difficult.

## STREAM GAGING

The most important regular activity of the Division is the work of maintaining and operating the stream gaging stations on the various watersheds of the State for the purpose of measuring the daily variations in gage height and determining the daily discharge of these streams. This work is carried on under a cooperative agreement with the Water Resources Branch of the U. S. Geological Survey and is under the direct supervision of E. D. Burchard, District Engineer, with headquarters in Asheville. Various Federal agencies and private individuals and corporations cooperate with this and with the Geological Survey in the operation of these stations.

Seven stations are known as "Federal Type" and are maintained by the U. S. Geological Survey.

The U. S. Engineers contributed to the maintenance of thirty-five of these stations during this Biennium and have contributed to the construction of five new stations. At the present time, the U. S. Engineers are contributing to the maintenance of six stations on the Roanoke River, three on the Tar River, five on the Neuse River, nine on the Cape Fear River, seven on the Yadkin River, three on the Catawba River, and two on the Broad River.

The Soil Conservation Service has cooperated in maintaining several gaging stations on the Yadkin-Pee Dee River, the Cape Fear River, and the Piedmont

area, where soil erosion is at its worst. Due to the present emergency, all of these stations except the one on Brown Creek near Polkton have been discontinued during this Biennium.

The Tennessee Valley Authority has assisted in maintaining forty-three stations, all located within the Tennessee River watershed in North Carolina. Three new stations have been erected with the assistance of this agency during this Biennium.

Maintenance of three stations is carried on in coöperation with licensees of the Federal Power Commission on Cullasaja Creek at Highlands, Jonathan Creek near Cove Creek, and Pigeon River at Hepco. The U. S. Weather Bureau is assisting in maintaining five stations located on the Catawba River at Catawba, Fishing Creek near Enfield, Lower Little River at Manchester, Neuse River at Goldsboro, Neuse River at Kinston, and Tar River at Greenville. The City of Durham, the Champion Fibre Company, and the Appalachian Power Company make annual contributions to defray a portion of the expense of operation of gaging stations which furnish needed data for their operations.

On July 1, 1942, there were 124 active stations operating in the State of North Carolina listed in Table I. Besides these 124 stations, three stations, not listed, are used in connection with listed stations to obtain the slope of the surface of the water. All stations except two are recording stations. One of these is equipped with a wire weight gage and the other with a staff gage. Both are read twice a day.

During this Biennium, ten new stations have been established as follows:

Catawba River (South Fork) at Lowell, January 30, 1942.  
 Catawba River near Marion, October, 4, 1941  
 Henry Fork near Henry River, re-est., December 19, 1941  
 Northeast Cape Fear River at Chinquapin, August 1, 1940  
 Roanoke River near Scotland Neck, October 18, 1940  
 Yadkin River at High Rock, November 29, 1941  
 Nantahala River at Nantahala, May 14, 1942  
 Shooting Creek near Hayesville, February 26, 1942  
 Scott Creek above Sylva, June 12, 1941  
 Deep Creek near Roseland, July 27, 1940

The following stations were discontinued during the present Biennium:

Beaverdam Swamp at Lebanon  
 Deep Creek near Roseland  
 Dutch Buffalo Creek at Mount Pleasant  
 Dutchman Creek at Cornatzer  
 Elk Creek near Banner Elk  
 Fourmile Branch near Southmont  
 Little Brown Creek near Polkton  
 Little Raft Swamp at Red Springs  
 Little Yadkin River near Donnahah  
 Middle Creek at Elkton  
 Mountain Creek at Ellerbe  
 Muddy Creek near Archdale  
 North Fork Jones Creek near Wadesboro



Reedy Creek near Yadkin College  
 Scott Creek at Sylva  
 Uwharrie River at Trinity

The majority of these discontinued stations were operated in connection with the Soil Conservation Service for special studies for only a short time and, due to a curtailment of appropriations, could not be kept going.

Stream gaging must be a continuing activity, since the value of any record is dependent upon the length of continuous record available. If the extremes of flow, variations in flow, and total quantities of flow are to be known with any degree of accuracy, the record must be kept for a long period of time. At present, our records from active stations are available for periods as follows:

40 years and over .....	4	5 to 10 years .....	19
30 to 40 years .....	0	Less than 5 years .....	38
20 to 30 years .....	8		
10 to 20 years .....	55		124

Added to the long-term records should be one more station that has a record over a 40-year period but discontinued on account of back water from a dam. It will be noted from the above table that less than half of the present stations are old enough to be of very great value.

The funds now available consist of direct appropriations by the State to the U. S. Geological Survey and in the cooperative account of expenditures of this Division for stream gaging, and the Federal appropriations match these amounts on an equal basis. It costs approximately \$400 per year to operate and maintain a station. This amount is spent in repair, routine trips to collect record and measure the flow, and to prepare, calculate, and publish records. A comparison of this cost with the following tabulation of expenditures from State funds will show contributions to this item:

1940-1941	1941-1942
Direct appropriations.....\$13,300.00	Direct appropriations.....\$ 7,500.00
Cooperative expenditures 6,392.66	Cooperative expenditures 8,470.00
<hr/>	<hr/>
Total .....\$19,692.66	Total .....\$15,970.00

The large expenditures for the fiscal year 1940-1941 were occasioned by repairs to gaging stations damaged by the floods of August, 1940.

The Biennium covered by this report passed without any unusual incidents except the floods caused by excessive rains of August 13 and 30, 1940. These floods reached maximum stages in the Western part of the State and on the Roanoke River. The Piedmont and other Coastal Plain rivers were not seriously affected. These floods caused severe property damage and some loss of life. Many highways were washed out and numerous bridges were either destroyed or badly damaged. An emergency appropriation of \$7,800 was made as the State's part in the repair to gaging stations caused by this flood. The U. S. Geological Survey matched this appropriation with a similar amount.

## GROUND WATER INVESTIGATION

The increased dependence of many cities, industries, and private individuals upon ground water resources, especially in the Piedmont and Coastal areas, makes advisable a thorough investigation of these resources and the adoption of State laws governing the use of flowing wells. The experience of other coastal states which have suffered serious losses of ground water supplies through failure to control them points to the urgency of adoption of such laws to prevent similar losses in North Carolina.

This Division continues to collect records of ground water elevations in a number of abandoned wells throughout the State, in order to observe the trends of ground water elevations and to study the relationship between ground water elevations and precipitation and other surface factors. Some of the most important of these are McCauley Well at Chapel Hill, Freuler's Well at Roanoke Rapids, Kurfee Well at Mocksville, Governor Holt Well at Haw River, and Baldwin Well at Blantyre. Monthly releases are published for the elevation of the McCauley Well and Baldwin Well.

## QUALITY OF WATER INVESTIGATIONS

The acceleration of activities in the location of new industries in the State has brought new emphasis on the need of greater and better records of chemical analyses of both surface and ground water supplies. This work has been carried on spasmodically and the records are far from being adequate. Many industries require water supplies of specific quality suitable to their particular needs and processes, and the possession of adequate data relating to many areas of the State would greatly assist in advantageous location of new industries. This data should cover sufficient range of time to give complete information for all conditions affecting the various water sources. If the State is to succeed in its effort to locate such industries, it must have either a widespread and complete set of data on chemical quality to place before the prospect or have facilities for making necessary tests at sites that are otherwise practicable and desirable.

The General Assembly of 1941 made an appropriation sufficient to get the program started, but due to the present emergency, efforts to employ a chemist have been unsuccessful. The laboratory has been set up, and operated for several months but was discontinued when the chemist, Raleigh T. Daniel, went into military service. Plans are to resume the program when a chemist can be employed.

## EVAPORATION RECORDS

The Division has maintained evaporation stations at Lake Michie, Chapel Hill, and Badin, collecting records of evaporation from land and water surfaces. The equipment at Badin has been out of order for some time and cannot be replaced until the present emergency is over. Additional stations are greatly needed in other sections of the State in order to provide essential data for the design and operation of reservoirs.

## COASTAL STUDIES

Work was continued during the summer of 1940 but has had to be discontinued since that time. We are unable to secure the personnel to carry



on this program. In the summer of 1940, surveys were made at Atlantic, Wrightsville, and Carolina beaches. Special work was carried on at Fort Macon point, Moore's and Masonboro inlets, and Fort Fisher. This work is done under cooperative agreement with the U. S. Beach Erosion Board.

Of special importance to the State is the severe erosion taking place at Fort Fisher and Fort Macon point. Unless some corrective measures are taken, indications are that the entire mound upon which Fort Fisher was built will be cut away. The beach at Fort Macon is rapidly being cut away, and unless some measure is taken, the Fort may soon be in danger. The success of the control measures taken at Wrightsville Beach gives hope that when necessary funds are available, the erosion can be brought under control.

### **COOPERATION WITH DIVISION OF GAME AND INLAND FISHERIES**

Under House Bill 265 in the 1941 Legislature, \$10,000 was appropriated for the reconstruction of a spillway at Lake Waccamaw. At the request of the Director of the Department, this Division drew up plans and specifications for this spillway and then let the contract and supervised the construction. This work was done by the Norfolk Construction Company and was completed the latter part of September, 1941.

### **POWER STUDIES**

Due to the lack of personnel, this Division has been unable to do very much in power studies during this Biennium. Several power plants have been completed, and others are now under construction. The Nantahala Power Company has completed two important hydro-electric projects, the high head project on the Nantahala River and the Glenville project on the Little Tennessee River. Two dams have been built by the Tennessee Valley Authority to be used for storage in connection with the Hiawassee Dam near Murphy, the Chatuge project on Hiawassee River and Nottely Dam on Nottely River. The Chatuge plant has been built, but no units have been installed, and it is used at the present time only for storage. The Nottely Dam is in Georgia but it is of importance to North Carolina as it is used for storage of water for the Hiawassee plant.

The Appalachie power plant, being built about seven miles from the North Carolina-Tennessee line, is about eighty per cent complete. Although this plant is built on the Tennessee side of the state line, the dam and reservoir are located in North Carolina.

## STREAM GAGING STATIONS IN NORTH CAROLINA

Station	Date Estab- lished	Total Years of Record	Coöperation
Abbotts Creek at Lexington.....	1940	2	C. & D.
Bear Creek at Hemp.....	1939	3	USAE—C. & D.
Beetree Creek near Swannanoa.....	1926	16	TVA—C. & D.
Broad River near Boiling Springs.....	1925	17	C. & D.
Broad River near Chimney Rock.....	1927	15	C. & D.
(Second) Broad River at Cliffside.....	1925	17	C. & D.
Brown Creek near Polkton.....	1935	7	Soil Conservation Service
Buffalo Creek near Greensboro.....	1928	14	C. & D.
(North) Buffalo Creek near Greensboro.....	1928	14	C. & D.
Cane River near Sioux.....	1934	8	TVA—C. & D.
Cataloochee Creek near Cataloochee.....	1934	8	TVA—C. & D.
Cape Fear River at Fayetteville.....	1889	43	USGS—Federal Type
Cape Fear River at Lillington.....	1923	19	USAE—C. & D.
Cape Fear at Lock No. 3 near Tarheel.....	1939	3	USAE—C. & D.
Cape Fear (NE) at Chinquapin.....	1940	2	USAE—C. & D.
Catawba River at Catawba.....	1934	8	C. & D.—USWB
Catawba River (South Fork) at Lowell.....	1942	-----	USAE—C. & D.
Catawba River near Marion.....	1941	1	USAE
Contentnea Creek at Hookerton.....	1928	14	C. & D.
Contentnea Creek near Wilson.....	1930	12	USAE—C. & D.
Cullasaja Creek at Cullasaja.....	1921	21	TVA—C. & D.
Cullasaja Creek at Highlands.....	1927	15	TVA—C. & D.—Federal Power Project 693
Dan River near Francisco.....	1927	15	USAE—C. & D.
Dan River at Leaksville.....	1929	13	USAE—C. & D.
Dan River near Wentworth.....	1939	3	USAE—C. & D.
Davidson River near Brevard.....	1920	22	TVA—C. & D.
Deep River (East Fork) near High Point.....	1928	14	C. & D.
Deep River (West Fork) near High Point.....	1928	14	C. & D.
Deep River at Moncure.....	1930	12	USAE—C. & D.
Deep River at Ramseur.....	1922	20	C. & D.
Deep River at Randleman.....	1928	14	C. & D.
Dial Creek at Bahama.....	1925	17	C. & D.
Drowning Creek near Hoffman.....	1939	3	USAE—C. & D.
Elk Creek near Elk Park.....	1934	8	TVA—C. & D.
Eno River at Hillsboro.....	1929	13	C. & D.
Fisher River near Copeland.....	1931	11	C. & D.
First Broad River near Lawndale.....	1940	2	USAE—C. & D.
Fishing Creek near Enfield.....	1918	24	USGS Federal Type—USWB
Flat River at Bahama.....	1925	17	C. & D.
Flat River at Dam near Bahama.....	1925	17	C. & D.
Forbush Creek near Yadkinville.....	1940	2	C. & D.
French Broad River at Asheville.....	1895	45	USGS—Federal Type—TVA
French Broad River at Bent Creek.....	1934	8	TVA—C. & D.
French Broad River at Blantyre.....	1920	22	TVA—C. & D.
French Broad River at Calvert.....	1924	18	TVA—C. & D.
French Broad River at Hot Springs.....	1934	8	TVA—C. & D.
French Broad River at Rosman.....	1936	6	C. & D.
Green River near Mill Spring.....	1939	3	USAE—C. & D.
Haw River near Benaja.....	1928	14	C. & D.
Haw River at Haw River.....	1928	14	C. & D.
Haw River near Pittsboro.....	1928	14	USAE—C. & D.
Henry Fork near Henry River.....	1941	1	USAE
Hiawassee River at Chatuge Dam near Hayesville.....	-----	-----	TVA
Hiawassee River below Hayesville.....	1934	8	TVA—C. & D.
Hiawassee River above Murphy.....	1939	3	TVA—C. & D.



STREAM GAGING STATIONS IN NORTH CAROLINA — *Continued*

Station	Date Estab- lished	Total Years of Record	Coöperation
Hiawassee River at Hiawassee Dam.....	1934	8	TVA—C. & D.
Horsepen Creek near Battle Ground.....	1934	8	C. & D.
Ivy River near Marshall.....	1934	8	TVA—C. & D.
Jonathan Creek near Cove Creek.....	1930	12	TVA—C. & D.—Federal Power Project 432
Big Laurel Creek near Stackhouse.....	1934	8	TVA—C. & D.
Linville River near Branch.....	1922	20	C. & D.
Little River near Princeton.....	1930	12	USAE—C. & D.
Little Sugar Creek near Charlotte.....	1924	18	C. & D.
Little Tennessee River near Fontana.....	1938	4	TVA—C. & D.
Little Tennessee River near Iotla.....	1929	13	TVA—C. & D.
Little Tennessee River at Judson.....	1896	46	TVA—C. & D.
Lower Little River at Linden.....	1928	14	USAE—C. & D.
Lower Little River at Manchester.....	1938	4	C. & D.—USWB
Lumber River at Boardman.....	1929	13	USGS—Federal Type
Mayo River near Price.....	1929	13	USAE—C. & D.
Middle Creek near Clayton.....	1939	3	USAE—C. & D.
Mills River near Mills River.....	1934	8	TVA—C. & D.
Mills River (South Fork) at The Pink Beds.....	1926	16	TVA—C. & D.
Mud Creek at Naples.....	1938	4	TVA—C. & D.
Nantahala River at Almond.....	1912	30	TVA—C. & D.
Nantahala River at Nantahala.....	1942		TVA
Nantahala River at Rainbow Springs.....	1940	2	C. & D.
Neuse River near Clayton.....	1927	15	USAE—C. & D.
Neuse River near Goldsboro.....	1930	12	USGS—Federal Type—USWB
Neuse River at Kinston.....	1930	12	USAE—C. & D.
Neuse River at Northside.....	1927	15	C. & D.
New River (South Fork) near Jefferson.....	1929	13	C. & D.
New River (North Fork) at Crumpler.....	1928	14	C. & D.
Noland Creek near Bryson.....	1935	7	TVA—C. & D.—Philip G. Rust
Nolichucky River at Poplar.....	1925	17	TVA—C. & D.
North Toe River at Altapass.....	1938	4	TVA—C. & D.
Nottely River near Ranger.....	1918	24	TVA—C. & D.
Oconalufy River at Cherokee.....	1921	21	TVA—C. & D.
Pee Dee River near Ansonville.....	1938	4	C. & D.—Carolina Power & Light Co.
Pee Dee River near Rockingham.....	1927	15	C. & D.
Pigeon River at Canton.....	1928	14	TVA—C. & D.
Pigeon River near Hepco.....	1927	15	TVA—C. & D.—Federal Power Project 432
Reddies River at North Wilkesboro.....	1939	3	USAE—C. & D.
Reedy Fork Creek near Gibsonville.....	1928	14	USAE—C. & D.
Richardson Creek near Marshville.....	1940	2	USAE—C. & D.
Roanoke River at Roanoke Rapids.....	1930	12	USGS—Federal Type—USAE
Roanoke River near Scotland Neck.....	1940	2	USAE
Rockfish Creek near Hope Mills.....	1939	3	USAE—C. & D.
Rocky River at Norwood.....	1929	13	C. & D.
Rocky River at Turnersburg.....	1940	2	C. & D.
Shooting Creek near Hayesville.....	1942		TVA
Smith River at Spray.....	1939	3	USAE—C. & D.
South Toe River at Newdale.....	1934	8	TVA—C. & D.
Swannanoa River at Biltmore.....	1934	8	TVA—C. & D.
Swannanoa River (North Fork) near Black Mountain.....	1926	16	TVA—C. & D.
Tar River at Greenville.....	1935	7	USAE—C. & D.

STREAM GAGING STATIONS IN NORTH CAROLINA — *Continued*

Station	Date Estab- lished	Total Years of Record	Coöperation
Tar River at Nashville.....	1928	14	USGS—Federal Type
Tar River at Tarboro.....	1931	11	USAE—C. & D.
Tar River near Tar River.....	1939	3	USAE—C. & D.
Third Creek at Cleveland.....	1940	2	C. & D.
Tuckaseegee River at Bryson.....	1897	45	TVA—C. & D.
Tuckaseegee River at Dillsboro.....	1928	14	TVA—C. & D.
Tuckaseegee River at Tuckaseegee.....	1934	8	TVA—C. & D.
Uharie River near Eldorado.....	1938	4	USAE—C. & D.
Valley River at Tomotla.....	1918	24	TVA—C. & D.
Waccamaw River at Freeland.....	1939	3	USAE—C. & D.
Watauga River near Sugar Grove.....	1940	2	C. & D.
Yadkin River at High Rock.....	1941	1	USAE
Yadkin River at Wilkesboro.....	1929	13	C. & D.
Yadkin River at Yadkin College.....	1928	14	C. & D.
Yadkin River at Patterson.....	1939	3	USAE—C. & D.
South Yadkin River at Cooleemee.....	1928	14	C. & D.
South Yadkin River near Mocksville.....	1938	4	C. & D.





